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World Survey of Current Research and Development on Roads and Road Transport (1980)

International Road Federation
Washington, DC

Prepared for

Federal Highway Administration
Washington, DC

Dec 80

U.S. Department of Commerce
National Technical Information Service
NTIS

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1980
WORLD SURVEY OF CURRENT RESEARCH AND DEVELOPMENT ON ROADS AND ROAD TRANSPORT

A REPORT
COVERING AN INVENTORY
OF 54 COUNTRIES

SPONSORED BY
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WASHINGTON, D.C.

PREPARED BY INTERNATIONAL ROAD FEDERATION
1023 WASHINGTON BUILDING WASHINGTON, D.C.

in cooperation with the
Organization for Economic Cooperation and Development
and the
Transportation Research Board

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16. Abstract
The 15th in a series of annual reports on inventories of research and development projects conducted by governmental, academic and commercial research organizations in 54 countries, as reported by surveyors of the International Road Federation, the International Road Research Documentation program of the OECD, and the HRIS. It is the only publication that reports world-wide information on current research activities in the highway field.

The report list 9,232 projects, classified in accordance with the subject area classification system of the Transportation Research Board.

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1980

WORLD SURVEY OF CURRENT RESEARCH AND DEVELOPMENT ON ROADS AND ROAD TRANSPORT

Prepared for

THE FEDERAL HIGHWAY ADMINISTRATION

UNDER

CONTRACT No. DOT-FH-11-8893

INTERNATIONAL ROAD FEDERATION

WASHINGTON, D.C.

December 1980

FEDERAL HIGHWAY ADMINISTRATION
Washington, D.C. 20590

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G.D. Love, Associate Administrator for Research and Development
C.F. Scheffey, Director, Office of Research J.R. Abernathy, Administrative Program Coordinator

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W. GERALD WILSON

December 31, 1980

Mr. J.R. Abernathy
Administrative Program Coordinator
Office of the Associate Administrator
for Research and Development
Federal Highway Administration
Washington, D.C. 20590

Dear Mr. Abernathy:

I am pleased to submit the 1980 WORLD SURVEY OF CURRENT RESEARCH AND DEVELOPMENT ON ROADS AND ROAD TRANSPORT, in compliance with the provisions of Contract No. DOT-FH-11-8893.

A total of 68 countries was contacted and we received information from 54, including 22 resurveys and 32 supplementary surveys. Of the 9,232 projects reported, some 2,900 were new ones.

I express the appreciation of the International Road Federation to the Federal Highway Administration for its support over the years, to the United States Transportation Research Board and to the Organization for Economic Cooperation and Development for their assistance in the surveys of the United States and of the European countries, respectively. We are also grateful to the officials and researchers in the countries covered by the survey for their cooperation and contributions to the success of the inventory.

Sincerely,

W. G. Wilson

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PREFACE

This is the fifteenth annual report of the International Road Federation's continuing World survey of current Research and Development on Roads and Road Transport. It covers a total of 54 countries, including the United States. Since 1965 the series has reported on the activities in 77 countries, having included a cumulative total of 72,414 entries, corresponding to some 33,000 individual projects. Thirty-five in-depth studies on selected technical subjects have also been completed under the program. It represents the only world-wide inventory of highway research in progress, being a cooperative effort of the Federal Highway Administration and the International Road Federation.

Other participants in this effort are the Organization for Economic Cooperation and development (OECD) through its International Road Research Documentation (IRRD) program which sponsors inventories in 17 countries with information from the British Transport and Road Research Laboratory (TRRL); the Highway Research Information Service (HRIS) of the Transportation Research Board supplying information for the United States; many individuals and organizations, including national Road Associations and IRF Fellowship Students listed under the country headings, who have contributed to the successful completion of these reports.

The purpose of the R & D report is to provide for all who may be interested in highway matters a simple, timely record and summary of current highway research and development througout the World. Many requests for additional information on research studies included in this report are received each year and readers wishing additional material are referred to the instructions on page 3.

In a continuing effort to improve the content, form and usefulness of the report, readers are invited to submit to the International Road Federation in Washington any changes they may wish to suggest. The purpose is not only to compile and record the existing projects, but to encourage an interchange of information among researchers. The ultimate goal is to assist the countries in developing more productive highway research programs which will mean better and safer roads, lower maintenance costs and better living.

TERMS OF REFERENCE, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

1. Objectives

The terms of Contract No. DOT-FH-11-8893, and subsequent modifications, between the Federal Highway Administration, U.S. Department of Transportation, and the International Road Federation, provide for an "International Highway Research and Development Information Inventory" to be conducted by IRF. This effort includes, but it is not limited to, the following:

A. Initial surveys in selected countries not previously surveyed, as agreed upon by the Federal Highway Administration.

B. Total resurveys and supplemental surveys as deemed necessary in previously surveyed countries.

C. In-depth studies of current research in specific fields of interest.

D. The Maintenance of cooperation in the continuing program with OECD and other organizations.

E. Improvement of plans and procedures that can be utilized efficiently and effectively in the future in keeping project research information up-to-date through periodic re-inventories.

2. Cooperation with Other Organizations

The International Road Federation acknowledges the cooperation received from several organizations throughout the World. Special mention should be made of the following:

- The Federal Highway Administration, U.S. Department of Transportation, Washington, D.C.
- The Highway Research Information Service (HRIS) of the Transportation Research Board, Washington, D.C.
- The International Road Research Documentation Group (IRRD) of the Organization for Economic Cooperation and Development. (OECD), Paris, France.
- The Transport and Road Research Laboratory, Crowthorne, England, the English Documentation Center for the International Road Research Program.

We also acknowledge the contribution of:

- The various governmental and private organizations supporting the development of roads and road transport throughout the World.
- The national road associations affiliated with IRF in about seventy countries which have assisted IRF in this effort.
- The IRF investigators and representatives in the conduct of the resurveys, updatings and in-depth studies.
- The IRF Fellows and other highway engineers working in private engineering firms and public organizations who have contributed to this inventory.

3. Response to Survey

A total of 54 countries reported 9,232 projects, some 2,900 of which were new, and 2,216 were shown to be completed.

Figure I shows numerically the number of highway research projects reported per subject area. Figure II shows the subject area list prepared by the Transportation Research Board, it indicates the Highway Research Information Service (HRIS) number given to each project.

4. Conclusions

The global nature of interest held by the Federal Highway Administration is clearly evidenced in its continued cooperation with IRF in the annual world surveys of current research and development. The interest in an international exchange of road and road transport research information is strong and increasing, as evidenced by the expanding activities of the Highway Research Information Service and the International Road Research Documentation Centers, and by the interested cooperation of many countries and individuals in the collection and distribution of such information by IRF.

There is a growing interest, in this country and abroad, in proposals that highway research information programs be expanded to embrace research in other areas of transportation.

Because there is a fairly rapid turnover of research projects, the triennial resurveys currently programmed appear to be about as widely spaced as is justifiable, while, on the other hand, the interval is short enough to catch most projects as they are initiated or terminated. During a three-year period many research projects will, of course, be started, modified in scope or brought to completion. Over a brief period of time, however, such chamges will not significantly affect the essential characterization of research in any country, and if they are cumulatively recorded in triennial resurveys there is a little loss of timeliness. Nevertheless, IRF believes that a supplementary annual survey reporting new projects, indicative of changes in concerns or trends, is informative and necessary.

An adequate research inventory requires direct personal contacts by professionally qualified investigators who can explain the objectives of the survey, exhibit the published results of previous surveys, assist in the filling out of forms, follow up on delayed returns, find new leads by appropriate inquiries, and check on the coverage obtained. This is what IRF designates as "complete resurvey". The present schedule of a complete resurvey in each country every third year should be continued. The numbers of new projects that have been reported in limited supplementary surveys during the intervening years fully warrant an annual review and listing of new projects.

The annual reports of IRF should be given wide circulation, particularly in areas where there are no regional information exchanges available, so that they may be of maximum benefit in the highway research field.

5. Additional Project Information

The principal benefit of this report will go to the individuals and organizations using the information contained in it. The researcher (individual or organization) who needs additional information is invited to contact any of the organizations or research agencies participating in this program (or the International Road Federation, IRF, in Washington) when seeking information on any of the projects. It should be noted, however, that the IRF does not have comprehensive information on the projects and would have to refer requests for additional information to the researcher. While the IRF is ready to assist in any way it can, the response would be expedited if inquiries were sent direct to the research organization.

A more detailed project summary is being filed by the Highway Research Information Service (HRIS) of the Transportation Research Board for U.S. research projects. The International Road Research Documentation (IRRD) program files the information on research in Australia, Austria, Belgium, Canada, Finland, France, Germany, Ireland, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and Yugoslavia.

6. Recommendations

The world-wide survey of current highway research and development is well established and programmed on a continuing basis. New research is constantly being initiated and new techniques are being developed for the exchange of an expanding store of information. The survey is a comprehensive outline of research projects which are currently receiving the attention of road research centers world-wide.

A further dimension would be added to the report if it were possible to determine what the major road R & D centers perceive as their developing needs and trends and the extent and nature of the response planned to meet them. Thus it is also recommended that IRF make the attempt to obtain such information and summarize it in a narrative supplement to the main survey.

Figure 1

Number of Highway Research Projects by Subject Areas

Subject Area	Number of Projects	Percent
11. Administration	274	2.97
12. Planning	548	5.94
13. Forecasting	172	1.86
14. Finance	33	0.36
15. Socioeconomics	303	3.28
16. User Needs	155	1.68
17. Energy and Environment	291	3.15
21. Facilities Design	310	3.36
22. Hydrology and Hydraulics	192	2.08
23. Environmental Design	158	1.71
24. Pavement Design and Performance	849	9.20
25. Structure Design and Performance	939	10.17
31. Bituminous Materials and Mixes	330	3.57
32. Cement and Concrete	283	3.07
33. Construction	210	2.28
34. General Materials	414	4.48
35. Mineral Aggregates	155	1.68
40. Maintenance	221	2.39
41. Construction and Maintenance Equipment	82	0.89
51. Safety	671	7.27
52. Human Factors	256	2.77
53. Vehicle Characteristics	396	4.29
54. Operations and Traffic Control	532	5.76
55. Traffic Flow, Capacity and Measurements	394	4.27
61. Exploration - Classification (Soils)	176	1.91
62. Foundations (Soils)	442	4.79
63. Mechanics (Earth Mass)	303	3.28
64. Soil Science	87	0.94
70. Transportation Law	30	0.32
90. General	26	0.28

Total Number of Projects 9,232

Figure II

HRIS SUBJECT AREAS

PLANNING AND ADMINISTRATION

11 **ADMINISTRATION**
administrative organization, education and training, functional organization, labor relations, system classification, personnel management, project programming, transportation statistics, manpower utilization, salary-wage practices

12 **PLANNING**
modal selection, planning process, state and regional studies, transportation patterns, transportation systems and technology, data bank and measurements, urban transportation planning

13 **FORECASTING**
demand simulation, land use, market estimates, methodologies, passenger and freight movements

14 **FINANCE**
budgets, financial expenditures, financial programming, financial requirements, financial sources, fund allocation

15 **SOCIOECONOMICS**
accessibility effects, cost allocation, disruption and displacement, economic impact, economic projections, land acquisition, land development, pricing strategies

16 **USER NEEDS**
market analysis, transportation of the disadvantaged, travel behavior and shipper concerns, vehicle and user savings and costs

17 **ENERGY AND ENVIRONMENT**
fuel economy, ecological systems, energy flow analysis, noise and air quality studies, alternative fuels

DESIGN

21 **FACILITIES DESIGN**
aerial and ground surveys; photogrammetry; location and right-of-way; utilities accommodation; roadways, runways, and waterways design; yards, tracks, controls, and communications design; safety appurtenances design and placement

22 **HYDROLOGY AND HYDRAULICS**
surface drainage, bridge and culvert hydraulics, canals and open channels design, storm sewer design, hydraulic structures and energy dissipators, erosion control systems, river and stream mechanics

23 **ENVIRONMENTAL DESIGN**
roadside development, rest areas, landscape architecture, water supply and treatment, waste water and sewerage disposal, erosion and water pollution control, noise abatement systems, ecological impact abatement

24 **PAVEMENT DESIGN AND PERFORMANCE**
pavement management systems, theory and mathematical modeling, distress and performance, evaluation and testing, structural rehabilitation and overlays, shoulders, surface properties, vehicle interaction

25 **STRUCTURES DESIGN AND PERFORMANCE**
bridges; subsurface structures; buildings and shops; port and terminal facilities; miscellaneous pedestrian and vehicular support systems; evaluation, testing, and performance; structural mechanics and dynamics

MATERIALS AND CONSTRUCTION

31 **BITUMINOUS MATERIALS AND MIXES**
bituminous aggregate bases, materials, paving mixtures, surface treatments, characteristics and tests

32 **CEMENT AND CONCRETE**
concrete admixtures, concrete characteristics and tests, concrete curing, concrete durability, portland cements

33 **CONSTRUCTION**
construction control, earthwork construction, flexible pavement construction, rigid pavement construction, structural construction

34 **GENERAL MATERIALS**
adhesives and bonding agents; coating, signing, and marking materials; metals and welding; nonbituminous surface treatments; nondestructive and nuclear testing; nuclear application other than testing; pipes and culverts; sealants and fillers

35 **MINERAL AGGREGATES**
aggregate characteristics and tests, manufactured aggregates, natural aggregates

MAINTENANCE AND EQUIPMENT

40 **MAINTENANCE**
maintenance management; runway, roadway, or guideway maintenance; structure maintenance; traffic service maintenance, including snow and ice control

41 **CONSTRUCTION AND MAINTENANCE EQUIPMENT**

OPERATIONS AND SAFETY

51 **SAFETY**
accident records, emergency medical services, pedestrians, law enforcement, operator education and regulation, compatibility of standards, transportation of hazardous materials

52 **HUMAN FACTORS**
user information needs, physical and medical conditions, alcohol and drugs, vision and visibility, operation simulation, behavioral studies

53 **VEHICLE CHARACTERISTICS**
vehicle size and weight, occupant restraint and protective systems, new vehicle technology, vehicle-size mix factors, vehicle lighting, crash injury research, vehicle performance, vehicle identification and inspection

54 **OPERATIONS AND TRAFFIC CONTROL**
transportation systems operations; transportation user services, except emergency medical services; parking and terminals; operational effects of roadway, runway, or guideway elements; traffic control devices; traffic control systems; traffic regulations; railroad-highway grade crossings; communications and transportation system management; productivity and performance measures

55 **TRAFFIC FLOW, CAPACITY, AND MEASUREMENTS**
traffic flow characteristics, traffic flow theory, facility capacity, quality of traffic service, traffic measurement, traffic evaluation methods

SOILS, GEOLOGY, AND FOUNDATIONS

61 **EXPLORATION-CLASSIFICATION (Soils)**
air photo interpretation, earth materials identification and classification, geological exploration, geophysical exploration, petrography, soil and rock properties

62 **FOUNDATIONS (Soils)**
foundation soils, grouting, marshes, peat bogs, muskegs, soil compaction and stabilization, subgrades and bases

63 **MECHANICS (Earth Mass)**
earthquakes and landslides, layer system mechanics, rock mechanics, soil erosion, soil mechanics, subsurface drainage and permeability, conduits and tunnels

64 **SOIL SCIENCE**
chemical and physicochemical aspects, environmental effects on soils, frost action in soils, soil stabilization theory

TRANSPORTATION LAW

70 **LAW**
eminent domain and land use, contract law, tort liability, environmental issues in transportation, motor vehicle and traffic law

GENERAL

90 **HIGHWAY RESEARCH GENERAL**
five or more subject areas

HIGHWAY RESEARCH IN 54 COUNTRIES

This section includes the countries submitting reports of current research and development on roads and road transport currently in progress or recently completed.

For each country, projects are grouped according to the agencies conducting the research. The title of each project is normally followed by a brief description of the work and names of those directly responsible for the research or development.

For a country in which a "complete resurvey" has been made, the inventory listing includes all currently active or inactive projects, and those that have been completed. Projects that were reported complete (or otherwise terminated) in a previous year's report, however, are not again listed, unless there is information that they have been reactivated. When a country reports a supplementary survey, only new projects are listed, i.e, projects that are reported for the first time.

Research projects and research organizations are assigned IRF identifying numbers which are cumulative in successive years, i.e., new projects and organizations from year to year are consequently numbered to follow those of preceding years. The HRIS identification number for each project signifies the "subject area" as explained on page 2 of this report. At the right hand margin of the page, there is shown the current status of each project as reported for 1980.

The inventory listings are not to provide more than a summary of the project in progress or recently completed, and some information as to special objectives. The project report sheets received by IRF are not designed to include full details of techniques and findings, though a brief abstract or summary is provided. These abstracts are necessarily brief, and it is expected that those interested in detailed research information in the fields of their specific interest will communicate directly with the appropriate research agencies. The address of each agency is provided for this purpose. Many projects show (citations) preceding the current status information. Information as to where a report has been published must also be obtained from the research agencies. It should be noted that in most cases, publication will be in the language of the indicated country.

The total number of projects listed in the 1980 report is 9,232, of which some 2,900 reported for the first time, and 2,216 are shown to be complete.

At the end of this report is an index of all listed projects, by subject area and countries. For those interested in particular aspects of research, the index will be helpful as a guide to the location of individual projects.

It is hoped that from the titles and the basic information here given, research workers will identify among the projects those that will stimulate direct and personal exchange of experience with other workers having similar interests.

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ALGERIA

Resurvey - 1980

Nicolas E. Manasseh

The 1980 survey of Algeria was made by Professor Nicolas E. Manasseh, and shows 17 projects, four for the first time. Ten projects are listed as completed. Professor Manasseh was assisted in making the survey by M. Lenhouhou, Director of Roads.

The following is a listing of projects previously reported to the IRF which have not been subsequently reported as COMPLETE, SUPERSEDED or ABANDONED.

1. MINISTRY OF PUBLIC WORKS AND CONSTRUCTION (Ministere de Travaux Publics et de la Construction): 135 Rue Didouche Mourade, Algiers

   a. National Laboratory of Public Works and Buildings: Route des Quatre Canons, Algiers

      (1) Computerized Inventory of Soil Profiles Throughout Algeria. All analyses of soil samples recorded on computer for use in future road locations. J-P. Redon. HRIS 61. ACTIVE

      (3) Stabilization of Local Materials. Study of typical local materials in Algeria, tuff, clays and marls, and their stabilization. H.R. Domec. HRIS 62. COMPLETE

      (4) Study of Characteristics of Typical Materials. Study of characteristics of gypsum, tuff and slag for use as base and subbase material. J.C. Horta. HRIS 35. COMPLETE

      (7) Stability and Resistance to Erosion of Road Slopes. Review of experience in other countries on erosion resistant stabilization of slopes and the development of economical solutions suitable for the coastal plains of Algeria. B. Alloul. HRIS 62. COMPLETE

      (8) Reinforcement of National Roads for Very Heavy Traffic. Observations and deflection measurements on test sections before and after reinforcement by addition of stabilized material in order to adapt effective reinforcement techniques to local materials and conditions. V. Delgado. HRIS 40. COMPLETE

      (10) Role of Thermal Constraints in the Cracking of Surface Courses. Evaluation of the influence of differential thermal expansion on the development of transverse and longitudinal cracking, taking into account also other parameters such as base course rigidity, surface course deformability, nature of base course material, etc. N.E. Meftah. HRIS 24. COMPLETE

   b. Directorate of Infrastructure: 135 Rue Didouche Mourade, Algiers

      (1) Trans-Sahara Highway South of the Town of Tamanrasset. To investigate the region, select routes, locate construction materials and develop construction designs. Benhouhou and staff, Planning Division. HRIS 12. ACTIVE

      (2) Construction Materials and Methods. To prepare a geotechnical map of the country indicating occurrences of road construction materials and their physical properties; recommend standards and methods for design and construction; prepare standard geometrics. Bentchicou and staff, SETI. HRIS 61. COMPLETE

      (3) Road Maintenance. To review present maintenance techniques and methods and prepare a maintenance manual. Bentchicou and staff. SETI. HRIS 40. COMPLETE

      (4) General Inventory of 6,440 Kilometers of Principal Roads in the National Network. To carry out aerial photography of these roads, perform field investigations to assess and evaluate their adequacy, as well as other studies. Bentchicou and staff, SETI. HRIS 21. ACTIVE

1. b. (5) Transportation Planning and Economics. To prepare a National Transportation Plan, including a forecast of future transportation needs, vehicle operating costs and standards or regulations for goods delivery. Bentchicou and staff, SETI. HRIS 13. COMPLETE

New Projects

(6) A General Traffic Study. To carry out a global traffic study on all the national road network, collect statistics on road transport and determine cost for vehicle operations. S.A.E.T.I. consultants. HRIS 12. ACTIVE

(7) Motorway Planning. To plan a motorway program covering 1000 Kms of coastal roads and work out details of execution. Consortium of consultants: S.A.E.T.I., Sets and Setor. HRIS 12. ACTIVE

(8) Urban Motorway Planning. To plan a program of urban motorways in the City of Algiers covering 100 Kms. of expressways. Consortium of consultants. HRIS 12. ACTIVE

(9) Selection of Maintenance Equipment. To review past performance of present equipment and study future requirements for equipment and operator training. Consortium of consultants. HIRS 41. ACTIVE

2. SOCIETE ALGERIENNE D'ETUDES ET DES TRAVAUX D'INFRASTRUCTURES (SAETI): Algiers

(1) Motorway Exit from City of Algiers. To plan and prepare designs for a motorway from downtown area, and study present traffic conditions and future needs. Inal. HRIS 21. COMPLETE

(2) A Southern Beltway for the City of Algiers. Study of the needs and plan for a beltway around the southern edge of Algiers. Inal. HRIS 12. COMPLETE

ARGENTINA

Supplementary Survey - 1980

Hipolito Fernandez Garcia

The 1980 survey of Argentina was reported by Ing. Hipolito Fernandez Garcia of the Argentine Highway Association. Nine new projects are reported. three of which are shown to be complete.

1. MINISTRY OF PUBLIC WORKS OF THE PROVINCE OF BUENOS AIRES (Ministerio de Obras Públicas de la Provincia de Buenos Aires): Calle 7. entre 58 y 59. La Plata. Buenos Aires

b. Laboratory of Material Testing and Technical Research: Calle 52,between 121 and 122. La Plata. Buenos Aires.

(26) Behavior of Road Bituminous Mixtures Under Petroleum Fuel Effect. A study of bituminous binders and the mixtures to overcome stripping due fuel and oil spillages from vehicles. D. Massaccesi. O. Agnusdei. HRIS 31. COMPLETE

(27) Non-Woven Fabrics in Road Construction. A study of the use of non-woven fabrics on embankments in the Buenos Aires area to improve bearing capacity, durability and wet weather operations. N. Villabona de Suarez. HRIS 62. ACTIVE

2. PORTLAND CEMENT INSTITUTION OF ARGENTINA (Instituto del Cemento Portland Argentino): San Martin 1137, Buenos Aires.

(15) Covering a Granite Block Pavement with Reinforced Concrete. To investigate the behavior of a reinforced concrete cover over granite block paving with load tests to be made and a 100 meter experimental length constructed. M. Aubert. C. Rodó Serrano. HRIS 24. ACTIVE

(16) The Attack of Saline Solutions on Soil Cement. A study to be made of the effects of saline solutions as mixing water in soil cements and the effect of these mixtures in contact with salt free soil cements. M. Aubert. C. Brunatti. HRIS 64. ACTIVE

3. MINISTRY OF TRANSPORT AND PUBLIC WORKS: NATIONAL HIGHWAY DEPARTMENT (Secretaria Estado Transportes y Obras Publicas. Direccion Nacional de Vialidad): Avenida Maipu 3, Puerto Nuevo, Buenos Aires.

(32) Laboratory Tests of the Behavior of Metal Railings with Galvanizing Protection. Thickness of cover and various other tests will be made on galvanized metal railings in various climatic zones of the country. J. Arcuri. A. Martinez. HRIS 34. ACTIVE

(33) Development of a Method for Reinforcing Pavements with Layers of Asphaltic Mixtures. To develop a new design procedure of pavement reinforcement by hot asphaltic mixtures applicable to conditions found in Argentina. R. Hudson. F. Carmichael and D.N. V. Highway Evaluation Group. HRIS 24. ACTIVE

4. NATIONAL UNIVERSITY OF ROSARIO - INSTITUTE OF APPLIED MECHANICS AND STRUCTURES (IMAE) (Universidad Nacional de Rosario - Instituto de Mecanica Aplicada y Estructuras): Avenida Pellegrini No. 250, Rosario. Santa Fe

(35) Flexible Pavement Evaluation and Overlay Design in Argentina. A revision of current methods and techniques for reinforcement or reconstruction of pavements in Argentina taking into account all applicable parameters used in pavement evaluation. J. Tosticarelli. HRIS 24. (Citations) COMPLETE

4. (36) Non-Destructive Testing Applied to Flexible Pavement Evaluation. A review to be made on various projects of the techniques and methods of non-destructive testing of pavements using all the methods developed or used by the I.M.A.E. J. Tosticarelli. H. Poncino. HRIS 24. ACTIVE

11. NATIONAL UNIVERSITY OF LA PLATA - FACULTY OF ENGINEERING (Universidad Nacional de La Plata - Facultad de Ingenieria): Calle 1 esq. 47, La Plata. Buenos Aires

(2) Bibliographic Investigation to Complete "Roads, Volume III." This project is complete as "Roads, Volume III" is now in print. I. Corvalán. HRIS 11. (Citations) COMPLETE

AUSTRALIA

Resurvey - 1980

The 1980 resurvey in Australia was conducted through the cooperation of IRRD. A total of 856 projects is reported, of which 186 are reported for the first time. Of the total, 351 are shown to be complete. Project reports were transmitted to the IRF by the British Transport and Road Research Laboratory, the English documentation center for the IRRD.

1. AUSTRALIAN ROAD RESEARCH BOARD: 500 Burwood Highway, 3133 Vermont, South, Victoria.

(14) Field Performance of Bitumens. To permit preparation of specifications and the making of long-term performance predictions. E. J. Dickinson. HRIS 40. IRRD 605731. (Citations) ACTIVE

(56) The Design and Construction of Roads for Light Density Traffic. Experimental sections of rural roads in areas of low rainfall. HRIS 24. COMPLETE

(57) The Design and Construction of Roads for Light Density Traffic. Studies of the performance of experimental sections under traffic. HRIS 24. COMPLETE

(74) Statistical Quality Control. To establish statistical descriptions of materials for use in the rationalization of testing procedures and specifications. J. B. Metcalf. HRIS 34. COMPLETE

(80) Tasmanian Pavements - Heavy Overload. To evaluate damage caused to rural roads in cold, wet climate by systematic overloading. P.O. Morris, D. W. Potter. HRIS 24. COMPLETE

(85) Speed on Curves. To relate vehicle speeds to curvature super-elevation, sight distance, and pavement width. J. McLean. HRIS 21. IRRD 605738. COMPLETE

(86) Traffic Detectors. To develop an efficient traffic detection device. B. H. Tritt. HRIS 54. COMPLETE

(93) Dense Plant Mix. To improve service performance of dense plant mix. H. P. Witt, J. W. H. Oliver. HRIS 24. IRRD 605736. (Citations) COMPLETE

(95) Acceleration and Deceleration of Modern Vehicles. Collection of data on speed change characteristics of cars recently registered to indicate performance potential. S. E. Samuels. HRIS 53. (Citations) COMPLETE

(96) Accidents and Geometric Design. Literature survey of reported Australian and overseas studies, together with assessment of available accident and inventory data and a determination of relationships between design elements and accidents. G. Robinson. HRIS 21. COMPLETE

(98) Automatic and Trailer Roughometer. Develop and maintain standard equipment for recording serviceability and ride quality on roads. A. E. Tynan, D. W. Potter. HRIS 24. (Citations) COMPLETE

(99) Vehicle Operating Costs. To develop procedures for establishing and updating vehicle operating cost estimates for use in economic evaluate of road projects and policies related to road transport. T. Thoresen. HRIS 16. IRRD 605742. (Citations) ACTIVE

(100) Road Load Economics. Study of the effects of varying vehicle load limits in order to develop better understanding of freight operations and the effects of load limit regulations. I. R. Ker. HRIS 14. COMPLETE

1. (101) Weighing Vehicles in Motion. To develop a portable and reliable device for weighing vehicles in motion to collect data for design and planning and for legislative purposes. B. H. Britt, B. R. Richard. HRIS 55. COMPLETE

(103) Quality Controls - Dimensions in Construction. To establish dimensional variability currently achieved in road construction and suggest tolerances permitted. A. A. Auff. HRIS 33. IRRD 605739. (Citations) ACTIVE

(104) Mineralogical Factors in Basalt Durability. Petrological examination of the fundamental mechanisms of rock deterioration in highways. L. Wylde. HRIS 35. IRRD 605734. (Citations) ACTIVE

(105) Effects of Long Vehicles in the Traffic Stream. To determine road design criteria to be used for roads with a high proportion of long commercial vehicles, considering passing times and distances and delays. R.J. Troutbeck. HRIS 22. IRRD 605737. ACTIVE

(106) Pavement Systems, - Design, Construction, Operation, Maintenance. To develop a system incorporating design, construction, maintenance and user cost system for evaluation and optimization of design and management systems. A. J. Scala. HRIS 24. (Citations) COMPLETE

(108) Traffic Conflicts. Study of the interpersonal communication between drivers and effects of traffic laws, signs and road geometry. J.F. M. Bryant, M. Williams. HRIS 54. IRRD 605740. (Citations) COMPLETE

(109) Development of a Microprocessor Controlled Data Acquisition System for Road Applications. To control range and mode of operation of measuring instruments, interface them to recording devices, provide error checking, and control experimental parameters. B. E Richards, B.H. Tritt. HRIS 21. COMPLETE

(113) Road Surface Noise Generation. To understand the mechanisms by which road surface noise is generated. S. E. Samuels. HRIS 17. IRRD 605744. (Citations) ACTIVE

(114) Guidelines for Residential Street Planning. To develop the guidelines needed to relate such planning to the creation of more socially and economically effective residential areas. P. O. Morris, G. Craig. HRIS 21. COMPLETE

(116) Transport Statistics. To provide basic physical and economic statistics describing importance and impact of roads and road transport, drawing intermodal comparisons where feasible. T. Thoresen. HRIS 11. IRRD 605733. (Citations) ACTIVE

(117) Calibration of Laboratory Skid Resistance Testers. To determine how the ARRB may best insure standardization of skid resistance measuring devices in Australia. J. W. H. Oliver, L. J. Wylde, H. P. Witt. HRIS 24. IRRD 605743. (Citations) COMPLETE

(118) Quality Control: Materials in Construction. To define variability and "proportion defective" to specification limits for a variety of material parameters so as to provide for realistic tolerances and statistically oriented specifications. W. J. Gray. HRIS 33. IRRD 605349. (Citations) ACTIVE

(119) Rumble Strip Patterns. To examine effect of various types of rumble strip on driver behavior, study use as safety devices, and develop patterns and warrants. J. R. Jarvis. HRIS 54. IRRD 605350. (Citations) ACTIVE

(120) In-Service Acceleration and Deceleration Behavior. To update road design elements concerned with vehicle acceleration and deceleration; new techniques for data gathering are to be developed. J. R. Jarvis. HRIS 53. IRRD 605351. ACTIVE

1. (121) Area Traffic Control (ATC) and Network Equilibrium. To develop algorithm for setting up ATC within context of equilibrium traffic assignment, then extend it to include trip distribution; implementation and testing to follow. J. Luk. HRIS 54. IRRD 605352. (Citations) ACTIVE

(122) Use of Rubber and Polymers in Bituminous Surfacings. To determine optimum composition and manufacturing conditions for using bitumen with scrap rubber for road surfacing. J. W. H. Oliver, E.J. Dickinson. HRIS 34. IRRD 605353. (Citations) ACTIVE

(123) Instrumentation for Road Surveys. For surveying road networks in Australia, to design microprocessor-based vehicle-mounted instrumentation system to measure automatically 6 road parameters. S. E. Samuels and others. HRIS 55. IRRD 605354. (Citations) ACTIVE

(124) Appraisal of Transport Planning Techniques. To appraise and improve existing techniques (including data storage and documentation). P. L. Dumble, D. P. Bowyer. HRIS 12. IRRD 605355. (Citations) COMPLETE

(125) Impacts of Transport System Management. To identify and measure these impacts, using surveys to monitor them, and ultimately to develop guidelines for planning, evaluating, and implementing transport management schemes. D. P. Bowyer. HRIS 12. IRRD 605536. (Citations) COMPLETE

(126) Assessment of Suitability of Mechanically Weak Rocks as Pavement Materials. To develop methods for assessment using surveys, petrological examination, and mechanical testing. L. J. Wylde. HRIS 35. IRRD 605357. (Citations) INACTIVE

(127) Tolerable Deflections for Pavements. To establish limiting deflection criteria for design and evaluation of performance of pavements of various materials. J. Widdup. HRIS 24. IRRD 605358. (Citations) ACTIVE

(128) Dynamic Loading Data Acquisition System. To develop system that can acquire dynamic pavement loading data for bridge design and pavement studies. B. E. Richards, B. H. Tritt. HRIS 24. IRRD 605359. ACTIVE

(129) Warrants for Auxiliary Lanes. By computer modeling of rural roads, to ascertain road geometry and driver behavior elements which are related to effects of providing auxiliary lanes. G. K. Robinson. HRIS 21. IRRD 605360. (Citations) ACTIVE

(130) Economic Constraints on Household Consumption Patterns. To identify and examine major constraints on mobility levels in urban areas, particularly household income. J. M. Morris, M. R. Wigan. HRIS 15. IRRD 605361. (Citations) ACTIVE

(131) Visual Interruption Apparatus As a Measure of Task Demand. To study visual behavior of drivers (especially novices) with visual occlusion device and electric oculography. D. Perry. HRIS 52. IRRD 605362. (Citations) COMPLETE

(132) Visibility of Illuminated Signs. To determine optimum visibility of such signs, including reflectorized and internally illuminated ones, evaluating ease of reading as related to contrast and luminace, day and night. J. F. M. Bryant. HRIS 54. IRRD 605363. COMPLETE

(133) Driver Perception and Recognition. To ascertain how well drivers can identify hazards on the road, taking several personal and road-related factors into account. J. F. M. Bryant and M. Armour. HRIS 52. IRRD 605364. COMPLETE

1. (134) Driver Behavior Related to Road Lighting. To study the driving task difficulty under various levels of fixed road lighting, including vehicle only. M. Armour and others. HRIS 52. IRRD 605365. (Citations) COMPLETE

(135) NAASRA Study of Road Maintenance Standards, Costing and Management. The contribution of the ARRB to the NAASRA study. P. O. Morris. HRIS 40. IRRD 605741. (Citations) ACTIVE

(136) Development of a Maintenance Rating System for Australian Roads. To evaluate and schedule routine maintenance and rehabilitation work based on assessment and quantification of the physical condition of the road network. K. F. Porter. HRIS 40. IRRD 605745. (Citations) ACTIVE

(137) Dynamic Truck Suspension Performance. A study of the dynamic pavement loading characteristics of different truck suspension types and axle configurations. P. Sweetman. HRIS 53. IRRD 605746. (Citations) ACTIVE

(138) Monitoring of Environmental Impacts. To obtain an increased understanding of process by which social and economic environmental impacts are generated and assess the reliability of prediction techniques now being used. K. G. Shapp. HRIS 17. IRRD 605747. (Citations) ACTIVE

(139) Road Geometry and Overtaking Behavior. To determine the proportion of drivers who will overtake a passenger car in a given distance or time increment in various road geometric configurations. R. J. Troutbeck. HRIS 53. IRRD 605748. ACTIVE

(140) Road Public Transport Planning Tools. To develop an operational appraisal or techniques for planning road public transport systems, with particular attention to alternate evaluation techniques. D.P. Bowyer, M. R. Wigan. HRIS 12. IRRD 605749. (Citations) COMPLETE

(141) Relationship between CBR and Elastic Modulus. To establish this relationship for subgrades so that it can be used in design methods based on elastic deflections. G. Sparks. HRIS 62. IRRD 605751. ACTIVE

(142) Traffic Signals for Bus Priority. To design a traffic signal system for use at signalized intersections in conjunction with standard traffic signals and with tram signals to provide bus or tram priority. J.F.M. Bryant. HRIS 54. IRRD 605752. (Citations) COMPLETE

(143) Bitumen Replacement from Brown Coal. To examine alternative sources for bitumen in the event that petroleum-based bitumen becomes unavailable. E. J. Dickinson. HRIS 34. IRRD 605762. (Citations) INACTIVE

(145) Accident Economics. To construct a basis for a continuing index of accident costs to be used in evaluation of road construction costs, regulatory and safety measures, etc. M. R. Wigan. HRIS 51. IRRD 605750. (Citations) ACTIVE

(146) Bituminous Mixes for Residential Streets. To design and evaluate durable thin bituminous mixes for residential streets and other lightly trafficed areas. J. W. H. Oliver. HRIS 31. IRRD 605753. (Citations) ACTIVE

(147) Use of Marginal Aggregates in Pavement Construction. Define the main categories of natural materials with mediocre geotechnical characteristics and devise methods by which they could be made suitable for pavement construction. L. J. Wylde. HRIS 35. IRRD 605754. (Citations) ACTIVE

(148) Overtaking and Passing. To determine the accuracy with which drivers can judge distance and velocity in the overtaking situation. M. Armour. HRIS 52. IRRD 605755. ACTIVE

AUSTRALIA (contd)

1. (149) Traffic Assignment Evaluation and Development. To update the current ARRB assignment program to match the present capabilities of traffic codes and therefore handle elastic demands. J.Y.K. Luk. HRIS 55. IRRD 605756. COMPLETE

(150) Seasonal Variation in Skid Resistance. To obtain quantitative data on the variation of wet road skid resistance values with season of the year in major urban areas. J. W. H. Oliver. HRIS 24. IRRD 605757. (Citations) ACTIVE

(151) Urban Goods Transport Forecasting. An examination of patterns of goods and goods vehicle movements and relating them to land use descriptions. P. O. Dumble. HRIS 13. IRRD 605758. ACTIVE

(152) Town Planning and Road Safety. To study and report on issues relevant to the planning management of residential street systems. R.E. Brindle. HRIS 12. IRRD 605759. (Citations) ACTIVE

(153) Temperature of Bituminous Concrete - Darwin. To collect data on the temperature regimes in bituminous pavements in tropical regions. H.P. Witt. HRIS 31. IRRD 605760. ACTIVE

(154) Aggregate Packing. To establish a design procedure for bituminous bound aggregate structures based on packing properties of aggregates and to prepare designs suitable for particular situations. J.W.H. Oliver. HRIS 35. IRRD 605761. INACTIVE

(155) Lateral Dynamic Performance of Articulated Vehicles. Ro review and evaluate existing knowledge of the limit performance, handling and stability of these vehicles and recommend a program of research. P.F. Sweatmen, L. Little. HRIS 53. IRRD 605846. (Citations) ACTIVE

(156) Multivariate Model of Traffic Speed on Two-lane Rural Roads. To develop the model including as major variables, traffic interaction, road factors, mechanical factors and human factors. D. Galin. HRIS 55. IRRD 605845. (Citations) ACTIVE

New Projects

(157) Method for Measurement of Bitumen Flow at Low Pavement Temperatures. To determine bitumen viscosities using a compression cylinder visometer at a specified shear strain rate near 0° Centigrade. H. Witt. HRIS 31. IRRD 605901. ACTIVE

(158) Full Scale Pavement Test Facility. To define the need for a full scale pavement test facility include special equipment and logistic support. G. Sparks. HRIS 24. IRRD 605902. ACTIVE

(159) Pavement Design - Residential Streets. To ascertain pavement design requirements for residential streets using complete variety of parameters including fiscal, rigid and flexible as well as mechanical properties. P. Morris, J. Widdup. HRIS 24. IRRD 605903. ACTIVE

(160) Reception, Accessibility and Travel Behavior. To examine the influence of perceptual variables, specifically perceived accessibility, measured accessibility and actual behavior for various population groups. J. Morris. HRIS 52. IRRD 605904. ACTIVE

(161) Micro-Economic Theories of Travel Demand. To develop theories of travel behavior which explains why people allocate their time to certain activities rather than for a specific stage of travel with other stages fully described. HRIS 16. IRRD 605905. ACTIVE

1. (162) Road Life Performance Curves. Development of road-life performance curves relating roughness to pavement structure, climatic environment and maintenance strategy which will be incorporated in NIMPAC road planning model. D. Potter. HRIS 40. IRRD 605906. ACTIVE

(163) Single Track Vehicle Demands. To obtain data for assessing two wheel vehicle ownership and activity as basis for analysis for safety and planning purposes, with direct application to appropriate legislation. M. Wigan. HRIS 53. IRRD 605907. ACTIVE

(164) Development of Travel Demand Techniques. To develop models and techniques of analysis and prediction appropriate to answer transport planning questions. P. Dumble, S. Goschnick, A. Makarov, R. Botterill. HRIS 13. IRRD 605908. ACTIVE

(165) Pavement Performance Observations (Dimensional Variability). To better understand the design-variability-performance relationships of dimensional factors including roughness and deflection on as-constructed pavements. A. Auff. HRIS 24. IRRD 605909. ACTIVE

(166) Development of a New Method to Calibrate NAASRA Roughness Meters. To develop a simple, reliable and valid technique for calibrating NAASRA roughometer vehicles. L. Little. R. Hannay. HRIS 41. IRRD 605910. ACTIVE

(167) Asphalt Pavement Experiments. To relate the performance of asphalt layers to structural design parameters with particular attention to thickness, temperature and traffic spectra. W. Gray, G. Sparks, H. Witt. HRIS 24. IRRD 605911. ACTIVE

(168) Sensitivity Studies of Road Planning Model (HDM). To set up and utilize the IBRD-HDM system on the AARB cyber to assess sensitivity and importance of process plans to parameter format and value changes, relevant to Australian conditions. D. Potter. HRIS 12. IRRD 605912. ACTIVE

(169) Driver Behaviour on Residential Streets. To build a data base for vehicle speeds on local streets classified by width, geometry, vegetation and the presence or absence of speed control devices in order to find ways of modifying driver behavior on them. M. Armour. HRIS 52. IRRD 606622. ACTIVE

(170) Tactile Speed Control Devices. To prepare guidelines for the design, construction and application of road humps and similar devices for use on public roads. J. Jarvis, J. Dods, G. Parker, B. Loel. HRIS 54. IRRD 606623. ACTIVE

(171) Car Following Behaviour under Different Lighting Conditions. To relate driver performance on freeways to road lighting levels. M. Armour. HRIS 52. IRRD 606624. (Citations) ACTIVE

(172) Management of Streets and Traffic in Existing Residential Areas. To provide a research basis for the many programs for traffic management and street changes in existing residential areas, as they affect traffic volume and behavior. R. Brindle. HRIS 54. IRRD 606625. (Citations) ACTIVE

(173) Traffic Generation of Sites and Activities. To improve the use of traffic impact assessment of proposed land use changes and assess whether there would be value in a national effort directed towards traffic generation data compilation. R. Brindle. HRIS 12. IRRD 606626. (Citations) ACTIVE

(174) Planning and Monitoring Transport System Management Schemes. To develop a clearer understanding of techniques and data appropriate to predicting and monitoring the effects of TSM schemes. D. Bowyer, R. Botterill, S. Goschnick. HRIS 12. IRRD 606627. ACTIVE

1. (175) Constraints in Travel Behaviour. To examine the major constraints on travel behavior when behavior is interpreted to include decisions such as where to live, how many cars to own and what trips to make by which modes at what times. J. Morris, P. Dumble. HRIS 15. IRRD 606628. (Citations) ACTIVE

(176) Road Public Transport Planning and Operation. To assist in improving procedures for planning and operating urban road public transport services in Australia. D. Bowyer, R. Botterill, S. Goschnick, J. Morris. HRIS 12. IRRD 606629. ACTIVE

(177) Compactability Criteria for Bituminous Plant Mix. To improve the service performance of bituminous plant mix by specifying compaction conditions and procedures which are related to the requirements of the particular composition being laid. J. Oliver. HRIS 31. IRRD 606630. ACTIVE

(178) Analysis of Rural Road Traffic Operations. To use a simulation model in a comprehensive study of traffic operations on single carriageway rural roads. G. Robinson, J. McLean. HRIS 54. IRRD 606631. ACTIVE

(179) Environmental Capacity - The Concept and its Use as a Traffic Planning Tool. To provide a quantitative basis for traffic management and road network design within localities and to give practical meaning to the concept of "environmental capacity" under Australian conditions. R. Brindle. HRIS 55. IRRD 606632. ACTIVE

(180) Hazards at Roadworks. A study of driver and workman behavior at road construction sites to develop improved warning signs and traffic management. J. Jarvis. HRIS 51. IRRD 606692. ACTIVE

(181) Statistical Specification for Pavement Surface Levels. To prepare rational statistical systems to evaluate construction compliance with road surface specifications. A. Auff. HRIS 33. IRRD 606977. ACTIVE

3. COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION: 314 Albert Street, East Melbourne, Victoria 3002.

a. Division of Applied Geomechanics: P. O. Box 54, Mt. Waverley, Victoria 3149

(12) Engineering Land Use. Application of the PUCE classification system to permit parallel recording of engineering problems and terrain characteristics as an aid to design and construction of engineering projects in urban and rural areas. K. Grant, A. Finleyson, P. Pahle, B.G. Richards, B. A. Wooltorton. HRIS 21. COMPLETE

(34) Mathematical Modeling of Road Pavement Systems. Development of theoretical models to simulate behavior mechanisms of pavement structures. C. M. Gerrard. B. G. Richards, M.A. Coulthard, L. J. Wardle. HRIS 24. COMPLETE

(35) Stress and Strain Path Response Studies in Earthen Materials. An experimental study of the mechanical response of earthen materials when subjected to stress and strain paths representative of those occurring in road pavements. M.S.E.D. Khorshid, B.G. Richards, B.A. Wooltorton. HRIS 62. COMPLETE

(36) The Role of Environment in Pavement Design. Quantification of environmental parameters and their influence on design and performance of pavements. B. G. Richards, B. A. Wooltorton. HRIS 24. COMPLETE

(37) Slope Stability Studies. Study of slope stability in relation to pavement location and design. K. Grant, M.S.E.D. Khorshid, B.G. Richards. HRIS 62. COMPLETE

3. c. Division of Building Research: Graham Road, Highett, Victoria, 3190

(4) Urban Planning Systems Study. Systems approach to select optimal locations of flow corridors, distribution nets and activity zones, and times of development for maximum ratio of benefits to costs. J. F. Brotchie, A. R. Toakley, R. Sharpe, J.R. Roy. HRIS 12. IRRD 606973. (Citations) ACTIVE

(7) Transportation System Study. To devise and analyze low cost improvement schemes for existing transportation schemes, with behavioral aspects to be incorporated by means of dis-aggregated demand models. J. R. Roy, P. G. Gipps, M. Taylor. HRIS 12. IRRD 606974. (Citations) ACTIVE

(8) Energy Resource Management in Transportation. To examine the effects of likely changes in availability of energy resources for transportation on life style of urban communities, appropriate forms of urban infrastructure and management policies for existing resources. A. R. Toakley, J.R. Roy, R. Sharpe, P. Gipps. HRIS 17. IRRD 606975. (Citations) ACTIVE

(9) Basalt Aggregate for Concrete. Determine effect on durability of concrete of secondary minerals in basalts, and develop test methods. W.F. Cole, F. D. Beresford. HRIS 35. IRRD 606633. (Citations) ACTIVE

(11) Durability of Basalt, Hornfels, and Granodiorite Aggregate in Flexible Pavements. To study durability of this type of aggregate (follow-on to another study of it in structural concrete). W.F. Cole and others. HRIS 35. IRRD 605366. (Citations) ACTIVE

(12) Interpretation of Vehicle Detector Output. To investigate the extent to which the output from induction loop-vehicle detectros can be used to monitor traffic conditions. P. G. Gipps. HRIS 54. IRRD 605884. ACTIVE

(13) Vehicular Access Near Traffic Signals. To study the interaction between traffic signal placement and timings and vehicular access to nearby properties. P. G. Gipps. HRIS 54. IRRD 605885. ACTIVE

New Projects

(14) Testing of Standard Connections (Pilot Programme Series 2/3). A testing of web side plate connections and flexible end plate connections for revision and upgrading of safe load tables. Lam Pham. HRIS 25. IRRD 606921. ACTIVE

(15) Pedestrian and Cycle Transport. To study and model the incidence, effects and potential of pedestrian and cycle traffic and the implications for urban planning. M. Taylor, P. Gipps, J. Roy. HRIS 12. IRRD 606976. ACTIVE

d. Land Use Research Division: P. O. Box 1666, A.C.T. 2600

(1) Land Use on the South Coast of New South Wales. Study of methods of acquiring and using information to analyze regional land-use options: Transport Chapter. F. Fitzwarrine, G.F. Byrne, P. A. Walker. HRIS 16. COMPLETE

e. Division of Mineral Chemistry: 339 Williamstown Road, 3207, Port Melbourne, Victoria

(1) Power Sources for Electric Vehicles. Research on development of lead batteries to determine most fruitful areas for future work. D.A.J. Rand, J.A. Hamilton. HRIS 53. COMPLETE

3. e. (3) Effect of Cobalt Additives on Lead-Acid Battery Life. To determine the effect of this additive to the electrolyte on cycle life. D.A.J. Rand, J. A. Hamilton, J. F. Moresby. HRIS 53. IRRD 605881. ACTIVE

(4) Battery Monitor for Electric Vehicles. To develop a device for logging charge and discharge, number of cycles and temperature of lead-acid traction batteries. D.A.J. Rand, J.A. Hamilton, S. Swann. HRIS 53. IRRD 605883. ACTIVE

(5) Optimization of an Electric Vehicle-Lead Battery System. To determine the effect of a number of operational parameters on the nature of the electrochemical, crystallographic and morphological processes that limit the capacity and cycle life of the lead-acid traction battery. D. Rand. HRIS 53. IRRD 606651. ACTIVE

(6) Positive Plates in Traction Batteries. To examine the electrochemical and crystallographic changes that occur in the positive plates of lead-acid traction batteries during charge/discharge cycles equivalent to service in an electric vehicle. D. Rand, K. Harris, J. Hamilton. HRIS 17. IRRD 606652. (Citations) ACTIVE

f. Division of Mechanical Engineering: Graham Road, 3190, Highett, Victoria

(1) Urban Fuel Economy of Passenger Vehicles. To characterize or quantify daily driving conditions on urban roads and establish fuel consumption tests. M. J. Wooldridge, R. M. Johnston, R. S. Trayford. HRIS 53. (Citations) COMPLETE

(2) Aggregate Fuel Consumption--A Parameter in Traffic Management Decisions. To provide a method for determining rate of aggregate fuel consumption, within reliably estimated limits of accuracy, on a given section of arterial roadway. M. J. Wooldridge and others. HRIS 55. IRRD 605367. (Citations) ACTIVE

New Project

(3) Reduction of Fuel Consumption in Passenger Cars. To reduce the amount and quality of fuel consumed by Australian passenger cars within the constraints of existing technology and production facilities. R. Johnston, K. Rogers, W. De La Mare, R. Trayford. HRIS 17. IRRD 606634. (Citations) ACTIVE

4. NATIONAL CAPITAL DEVELOPMENT COMMISSION: 220 Northbourne Avenue, Canberra, Australian Capital Territory

(11) Development of Warrants for Traffic Signals. To examine a possible graphical warrant for installation of traffic signals. Staff. HRIS 54. COMPLETE

(12) Cycleways in Cities. Consideration of cycleways and design criteria in Canberra. Staff. HRIS 21. COMPLETE

(13) Landscaping Road and Transport Corridors. To investigate costs and methods of satisfactorily landscaping such corridors. Staff. HRIS 23. COMPLETE

(16) Landscaping. A study of the landscaping of road and transport corridors. Staff. HRIS 23. COMPLETE

(17) Traffic Noise in Relation to Medium Density Housing. To determine acceptable interior noise levels. Staff. HRIS 17. COMPLETE

(18) Effectiveness of Acoustic Mounding. An assessment of the existing earth mounding as acoustic barriers. Staff. HRIS 17. COMPLETE

(20) Short Term Transportation Planning. Survey of existing travel patterns and development of disaggregated and conventional travel demand models. Staff. HRIS 12. COMPLETE

4. (22) Use of Accessibility in Transport/Land Use Modelling and Evaluation. To develop means of modelling the impact on land use of transport system changes and measure the utility of systems so that a means exists to evaluate. K. B. Davidson. HRIS 16. COMPLETE

(23) SIGSYT (Signal Study Tool) Computer Program Development. To develop the program for use of intersection signal optimization at isolated intersections. R. Akcelik. HRIS 54. IRRD 605844. (Citations) COMPLETE

(24) TRANSYT Version 6N Development. To modify the TRRL program TRANSYT/6 to use as a tool for performance evaluation of traffic signal networks. R. Akcelik. HRIS 54. IRRD 605843. (Citations) COMPLETE

5. DEPARTMENT OF MAIN ROADS, NEW SOUTH WALES: 309 Castlereagh Street, 2000 Sydney, N.S.W.

a. Materials and Research Section: Same address.

(5) Relationship Between the Petrological Nature of Shales, Weathering Tests, Construction Technique and Service Record. To develop testing procedures which will indicate the suitability of shales and soft rocks for use as pavement materials. E. J. Minty. R. Smith, A. Brett. HRIS 35. IRRD 606653. (Citations) ACTIVE

(7) Investigation of Pavement Design Method of Department of Main Roads. N.S.W. Field investigation of flexible pavements to check the adequacy of the Department's design formulae, to determine whether pavement thicknesses calculated therewith can be relaxed for arid areas and to establish any precautions necessary when assessing certain soils. G. Youdale. HRIS 24. IRRD 606654. (Citations) ACTIVE

(9) The Deterioration of Bitumen Seal Coats. To evaluate deterioration of seal coats on basis of permeability, weight change, loss of ductility and other physical changes. J. C. Giffen. HRIS 40. COMPLETE

(11) Measurement of Soil Density and Moisture Content. To determine the most satisfactory methods and equipment. R. B. Smith, G. Youdale. HRIS 34. IRRD 606655. ACTIVE

(12) Stabilization of Sub-standard Materials with Bitumen and Tar. To determine the stabilization properties of bitumen and tar, methods of incorporation and situations where they should be used. J. C. Giffen, P. Walter. HRIS 62. IRRD 606656. ACTIVE

(16) Soil Stabilization of Sub-standard Materials with Cement. To determine the causes of unsatisfactory performance of some pavements with cement stabilized base under a bitumen seal. J. C. Giffen, P. Walter. HRIS 62. IRRD 606657. ACTIVE

(24) Deterioration of Crushed Rock in Road Pavements. To devise laboratory test procedures which will enable prediction of unsatisfactory performance in the field of certain rock types. E. J. Minty, A. Brett. HRIS 61. IRRD 606658. (Citations) ACTIVE

(27) Creep and Shrinkage of Concrete. Problems on a large concrete bridge. K. Forrester, G. Donald, E. Haber. HRIS 32. IRRD 606659. ACTIVE

(29) The Specifications of Photogrammetry for the Investigation, Location and Design of Highways. Specification of accuracy of measurement, development of equipment, and the use of ortho-photography in urban areas. D. Watson, W.B.R. Smith. HRIS 21. INACTIVE

5. a. (30) The Use of Photogrammetry for the Investigation of Location and Design of Highways. The use of photogrammetry in cadastral surveying and the measurement of earthworks. V. O'Grady, W.B.R. Smith, C. Woodham. HRIS 21. INACTIVE

(31) Soil Moisture Pressure. To study soil moisture pressure characteristics for pavement design purposes. B. Hammons, G. Youdale. HRIS 63. IRRD 606660. ACTIVE

(32) Pavement Deflection. To examine the deflection performance criteria of asphaltic concrete pavements. R. Hopkins, L. Lainson. HRIS 24. IRRD 606683. ACTIVE

(34) Landslides. To develop various forms of remedial treatment of landslides connected with road construction. K. Forrester. HRIS 63. IRRD 606661. (Citations) ACTIVE

(35) New Types of Materials and Methods for Road Marking. To investigate the formulation, application and performance of raised pavement markers made from polyester-type materials. F. N. Whitefield. HRIS 34. IRRD 606662. (Citations) ACTIVE

(36) Plastic Subsoil Drainage Pipes. To investigate the drainage effects of aperture and filter variations. J. R. Jones. HRIS 34. ACTIVE

(37) Project Aerial Photography for Road Location and Design. To formulate a specification for precision aircraft navigation and the processing of aerial photography suitable for road location and design. D. Watson, W. Smith, W. N. Hayes. HRIS 21. INACTIVE

(41) Piezometer for Road Construction over Soft Ground. Development and refinement of equipment such as a borehole inclinometer for monitoring landslides and slips and an economical and convenient form of piezometer for monitoring conditions associated with construction of fills over swamp areas. K. Forrester, R. Coleman. HRIS 63. IRRD 606663. ACTIVE

(43) Non-quantifiable Aspects of Environmental Impacts. Establishment of a range of factors and acceptable weighting values appropriate to the numerical assessment and comparison of alternative proposals for major road and bridge works. C. H. Coneybeare, A. G. Potter. HRIS 17. INACTIVE

(44) Effectiveness of Noise Barriers. To verify the effectiveness of noise barriers and techniques for the effective attentuation of traffic noise including field measurements and model techniques. C. H. Coneybeare, A. G. Potter. HRIS 17. ACTIVE

(45) Community Reaction to Noise. To conduct field studies to determine community reaction to noise and levels at which significant objections can be expected. C. H. Coneybeare, A. G. Potter. HRIS 17. INACTIVE

(46) Public Involvement in Planning Road Works. Determination of effective procedures for incorporating public involvement in the planning of road works of major environmental significance or of a controversial nature. C. H. Coneybeare, A. G. Potter. HRIS 12 INACTIVE

(47) Probable Noise Levels. To establish a classified series of typical noise studies for use in the prediction of probable levels in urban and other noise sensitive areas. C. H. Coneybeare, A. G. Potter. HRIS 17. ACTIVE

(48) Capacity of Curb Inlets and Gratings for Use with Gully Pits. An investigation of the drainage capacity of the Department's curb inlets and gratings for variations in curb flow, pavement crossfall and longitudinal grade. V. O'Grady, P. Stone. HRIS 22. COMPLETE

AUSTRALIA (contd)

5. a. (52) Evaluation of Alternatives for Sign Format. To evaluate simple alternative for particular signs. Staff. HRIS 54. ACTIVE

(55) New Types of Materials and Methods for Road Marking. Research into paints, thermoplastics, and formed in-situ polyesters for line marking to increase life, reduce cost and increase visability. F. N. Whitefield. HRIS 34. (Citations) ACTIVE

(56) Relationship between Classification Testing and Structural Properties of Soil. G. Youdale, B. Hammonds. HRIS 61. IRRD 606664. (Citations) ACTIVE

(57) Improvement of Sub-soil Drainage Systems and Prediction of Moisture Conditions. Research into filter efficiency and efficacy including use of fabrics and membranes; and to instrument field installations and develop techniques for predicting subgrade moisture. G. Youdale and others. HRIS 63. IRRD 606693. (Citations) INACTIVE

(58) Skid Resistance of Pavement Surfacing. Laboratory and field investigations of both present and new surfacing materials. P. Walter, L. Lainson. HRIS 24. IRRD 606665. (Citations) ACTIVE

(61) Environmental Impact Study Procedures. Develop procedures for the evaluation and assessment of environmental impacts likely to result from highway construction. C. H. Coneybeare. HRIS 17. ACTIVE

(62) Monitoring of Pavement Roughness Conditions. To resurvey main roads to guage behavior and deterioration in riding quality. R. Hopkins. HRIS 24. IRRD 606666. ACTIVE

(63) Development of Geophysical and Seismic Investigation Procedures. Develop methods and refine instrumentation for monitoring landslide movements, measure pore pressures and stress in embankments and conduct seismic investigations. E. Minty, J. Williams. HRIS 61. IRRD 606926. ACTIVE

(65) Traffic Engineering Research with Color Video Equipment. To improve and extend detection of traffic movements over wider areas. J. McKerral. HRIS 54. ACTIVE

(66) Subsoil Drainage Systems. To improve knowledge of the physical properties required for components and the methods of design of the systems. R. Gerke, A. E. Tynan. HRIS 63. IRRD 605815. (Citations) ACTIVE

(67) Terrain Evaluation, Developments of Improved Geological Methods. Study of road cuts in relation to geological features and ground water conditions. E. J. Minty. HRIS 61. IRRD 605818. ACTIVE

(68) Soil Classification, Relationship between Classification Testing and Structural Properties. To develop more meaningful soil classification for pavement and subgrade materials and improve the reliability of pavement designs. E.J. Minty. HRIS 61. IRRD 605817. ACTIVE

(69) Geology Road Design and Mining Subsidence. To determine the relationships between seam thickness and depth, geological features, mining methods and subsidence and surface strains. E. J. Minty, R. Smith. HRIS 61. IRRD 605816. ACTIVE

b. Traffic Services Section: P. O. Box 198, Haymarket, N.S.W.

(12) Relationships Between Accidents and Volumes at Traffic Signals. Examine intersection accident patterns and establish relationship between volume and accidents at controlled intersections. A. Cariola. HRIS 51. COMPLETE

5. b. (13) Sign Control at Blacked-out Signals on Priority Roads. Investigation of methods that might be used to provide some sort of fail-safe device on traffic signals on priority roads in case of power failure. A. Cariola. HRIS 54. COMPLETE

(14) Investigation into Audible Traffic Signals for Blind Pedestrians. Determination of acoustical qualities for a sound signal having regard to audiological and environmental factors. F. Hulscher. HRIS 54. COMPLETE

(15) Development of Improved Inductive Loops for Vehicle Detectors. Development of more effective and efficient buried loops for vehicle detection and to minimize damage to road surfaces. F. Hulscher, K. Dean. HRIS 54. IRRD 606667. (Citations) ACTIVE

(16) Criteria for Right Turn Bans with Particular Reference to Main Roads. Before and after study of effects of right turn bans on accidents, delays, capacity, vehicle type composition of traffic flow and environmental effects. A. Cariola. HRIS 54. COMPLETE

(17) Evaluation of Strategic Control of Systems. Consider various options and then design procedures for assessment of the options. V. Manwaring, S. Moore. HRIS 54. COMPLETE

(18) Investigation of Fail-Safe Requirements of Traffic Signal Equipment. To define "unsafe failures" and find methods to determine "acceptable" incidence of unsafe failures, with regard to reliability of equipment and economic factors. F. Hulscher. HRIS 54. COMPLETE

New Project

(19) Analysis of SCAT. A traffic control system will be checked from a number of standpoints with a view toward improvement and making compatible with other systems. J. Luk, S. Samuels, J. McLean. HRIS 55. IRRD 606684. ACTIVE

c. Environmental Study Group: Same address.

(1) Social Effects of Freeways. To assess the effects produced by proposals to build freeways, both long and short term. C. H. Coneybeare. HRIS 15. IRRD 606927. ACTIVE

(2) Environmental Impact Study Procedures. Corridor studies to determine environmental impact on environs in the vicinity of urban and rural freeways not related to specific construction works. C. H. Coneybeare. HRIS 17. IRRD 606928. ACTIVE

d. Rural Investigations: Same address.

(1) Development of Computer Programs for Road Location, Design and Construction. To develop, refine and prove computer programs for incorporation into routine procedures in the investigation, design and construction of roads. R. A. Dunstan, W.B.R. Smith, C. Woodham, D. Eccleston. HRIS 21. IRRD 606929. (Citations) ACTIVE

(2) Review of Country Main Roads System. An assessment of trends in land use, population and traffic, road classification by functional use, and rationalization of a network to meet modern requirements. J. Brunt, D. Andrews, B. McNamara. HRIS 11. IRRD 606930. ACTIVE

(3) Detail Portrayal by Orthophotography, and Related Methods. To develop facilities and procedures for the portrayal, using orthophoto techniques, of development and other detail in terrain likely to be affected by road proposals. W.B.R. Smith, P. Sandwith, C. Woodham. HRIS 21. IRRD 606931. (Citations) ACTIVE

5. d. (4) Use of Remote Sensing Techniques for Highway Project Work. To investigate the use of color aerial photography for investigation, planning and other engineering purposes including the use of infra red, false color and various emulsions. W.B.R. Smith, P. Sandwith, B. Myers. HRIS 21. IRRD 606932. (Citations) ACTIVE

New Project

(5) Photogrammetric Studies of Surface Textures. At macroscopic and microscopic scales to develop photogrammetric methods for evaluating pavement texture or roughness, or surface geometry of small objects. W. Smith, E. Layton, P. Cox. HRIS 24. IRRD 606933. ACTIVE

6. MAIN ROADS DEPARTMENT, QUEENSLAND: Boundary Street, 4000 Spring Hill, Queensland

(2) Use of Digital Computer in a Vehicle Actuated Traffic Control System. To develop the use of digital techniques to replace analog for traffic control. K. Leitch, B. Warren, D. Dent. HRIS 54. COMPLETE

(3) Traffic Monitoring for Freeways. To develop traffic measuring devices to determine quality and rate of flow on freeways and associated ramps. K. Leitch, D. Dent. HRIS 54. COMPLETE

(23) Rideability of Roads. Development of apparatus, recording, and input systems for the evaluation of rideability of roads, considering advance planning of reconstruction and major maintenance, and short-term planning of maintenance at all levels. W. Gray. HRIS 24. COMPLETE

(26) Moisture in Pavements. Development of methods of measurement of moisture movement in pavements in various climatic conditions to aid pavement design. R. Gordon, T. Waters. HRIS 24. IRRD 605985. ACTIVE

(27) Bulking in Road Construction. Development of basic relationships of excavated materials characteristics, excavation methods and placing in building considerations in road construction. H. Kennedy. HRIS 33. COMPLETE

(28) Experimental Pavements in Central and Western Queensland. Pavement thickness and materials configurations under service conditions are being studied to provide data for pavement design optimization. Z. Vlasic, M. Martin. HRIS 24. IRRD 605986. ACTIVE

(35) Roadwork Optimization Investigation. To investigate computer programs for structure and earthmoving costs by variations in vertical grading. G. Hollingworth. HRIS 33. COMPLETE

(48) Experimental Pavements in Northern Queensland. To observe mechanical response and performance of various configurations of pavements to provide arguments for pavement and geometric design optimization in tropical areas and to assess local pavement materials under service conditions and compare with laboratory (model) characterization. M. Martin. Z. Vlasic. HRIS 24. IRRD 605987. ACTIVE

(49) Non-Destructive Test Methods in Construction Control. Evaluating non-destructive apparatus and methods used in construction practice for precision, reliability and durability, together with development of non-destructive methods for quality control based on probabilistic principles. R. Spies, B. Rule. HRIS 33. COMPLETE

(50) Repeated Loading Apparatus. To develop and calibrate a triaxial apparatus, study the mechanical characteristics, subgrade, pavement and stabilized materials, and develop more rational method of assessing pavement materials, T. J. Waters. HRIS 24 . (Citations) COMPLETE

6. (51) Investigation into Aging of Bituminous Surfacings. Assessing aging of bituminous samples of seal and hot mixes from various parts of Queensland, using rheometric and spectroscopic methods. R.E. Spies. HRIS 31. IRRD 605988. ACTIVE

(52) Development of Laboratory and Field Procedures for Geomechanical Investigations. To provide more precise information on soil and rock strength properties. N. F. Robertson. HRIS 61. COMPLETE

(53) Soundness of Rock. To assess the applicability of several soundness tests and their relative merit in relation to prediction of service life, cost of equipment and time to perform the tests. A. Davies. HRIS 35. IRRD 605989. (Citations) ACTIVE

(56) Experimental Planting and Propagation of Vegetation. To determine variables affecting health and performance of roadside plantings and determine principles, techniques and requirements needed for successful revegetation of slopes. G. Hollingsworth, R. Onions, B. Cook. HRIS 23. IRRD 606990. (Citations) ACTIVE

(57) Pavement Performance. To assess various factors affecting long term pavement performance, including materials, road configuration, construction practice, and level of quality control. M. Martin. HRIS 24. IRRD 605991. (Citations) ACTIVE

(58) Dimensional Tolerances in Construction. Determine construction tolerances acceptable for achievement of an adequate pavement structure. HRIS 33. COMPLETE

(59) Experimental Catchments. Measure rainfall and runoff on experimental catchments representing characteristic regions in Queensland. M. Hee. HRIS 22. ACTIVE

(60) Shrinkage and Creep of Concrete. Measurement of shrinkage and creep in concrete made from local aggregates. J. Fenwick, P. Rotolone. HRIS 32. IRRD 605992. ACTIVE

(61) Concrete Modulus. Measurement of modulus of elasticity of concrete in both compression and bending for various amounts of steel reinforcing and varying concrete strengths. J. Gralton, A. Carse. HRIS 32. COMPLETE

(62) Concrete Bridge Deck Analysis. Measurement and analysis of temperature effects on concrete bridge box girder bridges. J. Fenwick, A. Churchward. HRIS 25. IRRD 605993. ACTIVE

(63) Trip Generation Procedures. To assess the stability and characteristics of household trip generation in Brisbane, using 1960 and 1978 data, and from these data to develop a trip generation model usable for synthesis. J. Olsen, T. Grigg. HRIS 55. IRRD 605368. ACTIVE

(64) Telemetry Control. To design a telemetry and control system capable of linking a central traffic master to street equipment of various types via telephone cables. B.M. Wratten. HRIS 54. IRRD 605825. ACTIVE

(65) Control Devices and Equipment for Signal Coordination. To develop and evaluate both central and local signal equipment for traffic control in Queensland with respect to environment, maintenance and operation. R. C. Blinco. HRIS 54. IRRD 605826. ACTIVE

(66) Data Bank for Traffic Signals. Prepare a computer based data bank for traffic signal installations for control of maintenance and planning, and monitor costs of maintenance operations, and safety aspects. R. C. Blinco. HRIS 54. IRRD 605827. ACTIVE

6. (67) Noise Data Bank and Evaluation of Prediction Methods. To gather noise data for validation of current prediction methods, and undertake studies of the effects of traffic noise on communities. G. H. Hollingsworth. HRIS 17. IRRD 605824. ACTIVE

7. HIGHWAYS DEPARTMENT, SOUTH AUSTRALIA: Warwick Street, Walkerville, South Australia 5081.

a. Materials and Research Laboratories: P. O. Box 19, Walkerville, S.A. 5081

(28) Measurement of Temperature Changes in Concrete Structures due to Cement Dehydration. Laboratory and field measurements of temperature changes for different sizes of sections and different portland cements. D. Ashworth. HRIS 32. COMPLETE

(31) Use of Reflective Pavement Marking Devices and Adhesives. Evaluation of specifications for these materials for use in South Australia. J. Drabble, B. Gray. HRIS 34. COMPLETE

(32) Spraying Rates for Bituminous Sealed Roads. Laboratory and field investigations to determine spraying rates for bituminous sealing of roads. J. Potter, M. Church. HRIS 31. COMPLETE

(37) Reflective Sheeting for Road Signs. Study durability and effectiveness of this sheeting for use under Australian conditions. HRIS 34. COMPLETE

(41) Corrosion of Zinc Coated Steel Culverts. To predict potential corrosivity of natural water on durability of such culverts. HRIS 34. COMPLETE

(44) Compaction of Pavement Materials. Study of compaction criteria necessary and achievable in construction of road pavements. HRIS 33. COMPLETE

(45) Hot Mix Surfacing. Investigate mix design, durability, service life and performance of these surfacings. HRIS 31. COMPLETE

(46) Instrumentation of Selected Bridges. To investigate extent of temperature gradients caused by solar heat and long-term creep and shrinkage. HRIS 25. COMPLETE

(47) Creep and Shrinkage of Prestressed Concrete using Adelaide Aggregates and Cement. To determine amount of creep and shrinkage to be expected from local materials. HRIS 32. COMPLETE

New Projects

(50) Road Engineering: Structures. Primarily a study of creep in concrete from South Australian sources and various studies on steam curing, predicting and to improve service life of steel culverts. D. Ashworth, S. Stringer. HRIS 25. IRRD 606694. (Citations) COMPLETE

(51) Road Engineering: Pavements. A thorough study of current pavement design in South Australia with emphasis on performance evaluation, overlay design, material equivalencies, skid resistance, etc. P. Cops, C. Sandman, D. Wait. HRIS 24. IRRD 606922. (Citations) ACTIVE

b. Traffic Section: P.O. Box 19, Walkerville, S.A. 5081.

(1) Vehicle Detection at Pedestrian Crossings. To study the effect of the addition of vehicle detection at pedestrian-actuated signal crossings, on both motorists and pedestrians and accidents. Staff. HRIS 54. INACTIVE

7. b. (2) Traffic Signal Detection - High Speed Roads. To study the effect of pad detector position in relation to accident occurrence at traffic signals installed on high speed roads. Staff. HRIS 54. INACTIVE

(3) Examination of Vehicles Stopping at Traffic Signals on High Speed Roads. To study the effectiveness of a method for reducing the proportion of vehicles stopping at traffic signals on high speed roads. Staff. HRIS 54. INACTIVE

(4) Seasonal Variation of Vehicle Speeds. To determine if there is any particular basis for variations in vehicle speeds by time of day, day of week, month or season of the year. Staff. HRIS 55. INACTIVE

(6) Traffic Signal Co-ordination. To study the effect on traffic flow, traffic delays, proportion of vehicle stopped, and accidents by a co-ordinated traffic signal system. Staff. HRIS 54. INACTIVE

(8) Priority for Emergency Vehicles at Traffic Signals. To determine a method and feasability of reducing delays to emergency and public vehicles at traffic signals. Staff. HRIS 54. INACTIVE

(13) Pilot Traffic Management Study. To determine the effectiveness of traffic management measures in reducing accidents and of redirecting through-traffic in the road network of the Unley areas of metropolitan Adelaide. Staff. HRIS 54. INACTIVE

New Projects

(14) Traffic Studies: Accident Data Collection and Analysis. A study to correlate road construction and improvement programs in South Australia with a computer based accident data program. F. Park. HRIS 51. IRRD 606695. (Citations) ACTIVE

(15) Traffic Studies: Traffic Data Analysis. To provide by complete traffic studies a thorough planning survey of South Australia road system. F. Park. HRIS 12. IRRD 606696. ACTIVE

c. Technical Systems: P.O. Box 19, Walkerville, South Australia

(1) Graphical Cadastral and Network Data for Thematically Depicting Planning Oriented Data Items, Automatically. To describe the cadastre and the communication networks in digital form, so that it can be reproduced selectively depicting items contained on other files. HRIS 21. ACTIVE

d. Survey Section: Same address.

(1) Phototheodolite. Study the use of theodolite techniques for environmental impact statements in conjunction with photo-computer plotted perspective drawings. HRIS 21. COMPLETE

New Projects

(2) Road Planning: Remote Sensing. To study use of systematic color photo interpretation for highway engineering in broadest sense from land use, design, material location, etc. J. Porter. HRIS 21. IRRD 606697. ACTIVE

(3) Road Planning: Development of Incas. The development of an interactive cadastral survey computer system to improve the speed and accuracy of cadastral surveys connected with road projects. C. Deron, J. Porter. HRIS 21. IRRD 606698. ACTIVE

7. e. Planning Section: 33 Warwick Street, 5081, Walkerville, South Australia

(1) Road Planning: Road Inventory. To establish a data base which may be updated and manipulated which will form a road inventory having all pertinent data including bridge data. H. Tennosaar. HRIS 12. IRRD 606699. ACTIVE

(2) Road Planning: Road Aspects of Transportation Studies. To identify existing and future road needs and solutions for these needs in Adelaide metropolitan area in participation with land use and transport planning agencies. R. Tan. HRIS 12. IRRD 606900. ACTIVE

(3) Road Planning: Traffic Noise. To obtain noise level data, before and after, for incorporation into computerized highway design system for use in noise barrier design and in claim settlements. K. Green, R. Gayler, H. Tillyer. HRIS 17. IRRD 606901. ACTIVE

(4) Road Planning: Rural Transportation Studies. To assess the rural road network for development of a Departmental works program, utilizing the road inventory of IRF Project 7. e. (1). H. Tennosaar. R. Ide. HRIS 12. IRRD 606902. ACTIVE

8. COUNTRY ROADS BOARD OF VICTORIA: 60 Denmark Street, Kew, Victoria 3101

a. Materials Research Division: Same address.

(3) Physical and Chemical Weathering of Rocks. To study the weathering of various roadstones and its relation to mineral content. B. Fielding, S. Maccarrone. HRIS 61. IRRD 605969. (Citations) ACTIVE

(12) Skid Resistance of Roads and the Polishing of Aggregate. An investigation of the mechanism of polishing by laboratory and field tests. E. Vincent. HRIS 35. ACTIVE

(15) Investigation of Lime Cement and Other Additives. To determine the effect of additives on strength, dryness, plasticity, etc., by laboratory and field tests. J. N. Hanks, A. Ratnarajah. HRIS 62. COMPLETE

(17) Relationships Between Grading, Plasticity and Permeability for Granular Materials. To determine the effect on permeability of variations in grading of rock and compaction method. J. N. Hanks, A. B. Ratnarajah, B.J. Winberg. HRIS 35. COMPLETE

(22) A Friction Penetrometer for Foundation Assessment. Development of a penetrometer for foundation testing and prediction of pile lengths. J.C. Holden, A. Veismanis. HRIS 33. COMPLETE

(23) The Study of End-bearing and Skin-friction Components of Pile Capacity, for Steel and Concrete Piles. Field tests are being supported with extensive laboratory tests. Pile settlement behavior is also being studied. J. C. Holden, A. Williams. HRIS 33. COMPLETE

(26) Investigation of Foamed-bitumen as a Soil Stabilizer. To find suitable tests to assess stabilized soils. K. I. York, W. Sherwin, E. Nyoeger. HRIS 62. COMPLETE

(27) Retro-reflective Signing Materials and Delineation Devices. Field and laboratory testing of currently used and new materials to determine performance, effective life and suitability for use on signs, pavements, etc. E. N. Vincent. HRIS 34. COMPLETE

8. a. (28) Stress Corrosion Susceptibility for Prestressing Strands. Study of the stress corrosion susceptibility of prestressing strands using a linear elastic fracture approach to predict maximum tolerable defect size. R. S. Gilmour, A. Walker. HRIS 25. COMPLETE

(29) Testing of a Model of a Flat Prestressed Concrete Slab. Construction, instrumentation and testing of a 1/10 scale model of a flat prestressed concrete slab supported at finite points. G. Scott. HRIS 25. COMPLETE

(31) Use of Locally Available Non-Standard Materials in Road Pavements. An assessment through field and laboratory testing of the performance of locally available non-standard materials, using strength tests as the principal criterion. J. N. Hanks, A. Ratnarajah. HRIS 35. COMPLETE

(32) Zinc-in-Silicate Paints. Determination of the relative merits of commercially available inorganic zinc-rich paints. H. Taskis, V. Weldon. HRIS 34. COMPLETE

(35) Premixed Patching Materials. Evaluation of the performance of premixed road patching materials and development of improved typed. K.I. York, W. Sherwin. HRIS 40. COMPLETE

(37) Evaluation of Elastomeric Bearings. To provide experimental data for evaluating a design procedure for elastomeric bearings. M.D. Meadley and others. HRIS 25. COMPLETE

(39) Design and Performance of Rock Socketed Piles. To develop a method for designing large diameter cylinders and piles socketed into rock and to study the behavior under axial and moment loadings. A. Williams. HRIS 63. IRRD 606613. (Citations) ACTIVE

(40) Concrete Shrinkage Investigation. Laboratory and field investigations of the drying shrinkage behavior of various concrete mixes. S.B. Bromham, E. Nyoeger. HRIS 32. COMPLETE

(41) Road Surfacings of High Luminance Factor. An investigation of the possibilities of using locally made aggregates of high luminance factor in sprayed seals and hot mixed asphalt while maintaining high skid-resistance. J.D. Bethune and others. HRIS 24. COMPLETE

(42) Subsoil Drainage Materials and Design. Investigation of drainage and filtering properties of materials to improve specifications, reduce costs, and to determine strength and flow properties of subsoil drainage pipes. B. Weinberg. HRIS 63. IRRD 605971. ACTIVE

(43) Field Study of Behavior of Embankments Constructed from Highly Plastic Clays. Measurements of settlement at six-month intervals on 8m high embankment constructed of basaltic clay with plasticity index of up to 80 K.I. York. HRIS 62. COMPLETE

(44) Orthotropic Steel Decked Bridge Surfacings. A study of structures throughout the world with respect to performance of surfacing materials and laboratory evaluation of materials and systems to recommend for use in Melbourne. B.L. Phillips, W.R. Sherwin, C.D. van Tilburg. HRIS 25. COMPLETE

(46) Crushed Fine Aggregates in Structural Concrete. To examine the feasibility of using crushed fine aggregate (basalt) as a partial replacement for natural sands in structural concretes typically used in the Melbourne areas. S. B. Bromham, D. Meadley. HRIS 35. COMPLETE

8. a. (47) Structural Adequacy of Road Pavements. Interpretation of results from the deflectograph to provide overlay design criteria and compare with previous Benkelman Beam deflection criteria. Develop instrumentation systems for rapid processing of deflectograph results. E. Vincent. HRIS 24. IRRD 605972. ACTIVE

(49) Evaluation of Corrosion Characteristics of Steel Piling Under Various Conditions. Evaluation of the service performance of steel H-piles driven into natural soil, through determination of pH, resistivity, and chemical properties of soil and ground water. H. D. Taskis. HRIS 34. COMPLETE

(50) Air Quality in Vicinity of Roads. Establish existing air quality in vicinity of urban roads and freeways and of proposed roads and freeways and to predict air quality after proposed alterations to road and traffic patterns. D. J. Ford. HRIS 17. IRRD 605973. (Citations) ACTIVE

(51) Noise Levels from Motor Traffic. Determine existing noise levels for use in environmental impact statements determine noise levels of vehicles at various speeds; examine validity of British prediction models for Victorian traffic. G. W. Jameson. HRIS 17. IRRD 605974. (Citations) ACTIVE

(52) Corrosion of Steel Pilings. Determine rate of corrosion in uncoated H piles in various soil environments. R.E. Mann. HRIS 34. COMPLETE

(55) Lateral Load Capacity of Piles in Rock and Soil. To develop an analysis technique whereby the lateral load/deflection behavior of piles for bridges and retaining walls can be calculated. P. McDonald, G. Scott, G. Briant. HRIS 62. IRRD 605804. (Citations) ACTIVE

(56) Long Term Concrete Properties. Use of mathematical and/or structural modelling of all or part of a structure to analyze stresses, and develop instrumentation for monitoring long term movements. B. Bromham, B. Weinberg. HRIS 25. IRRD 605803. ACTIVE

(57) Effect of Pavement Temperature on Deflection. To develop a method of measuring pavement temperature and adjusting deflections to a base temperature during the analysis of routine deflection surveys. E. Vincent. HRIS 24. IRRD 605802. INACTIVE

(58) Characterization of Crushed Rocks. An investigation of methods for characterization of crushed rocks so as to improve the selection of the material for pavement construction. P. White. HRIS 35. IRRD 605801 ACTIVE

New Project

(59) Performance of Concrete Materials. To investigate shrinkage, creep and elastic modulus of a range of concretes commonly used in CRB structures, and to provide accurate and current values of concrete properties for bridge design purposes. B. Bromham. HRIS 32. IRRD 605975. ACTIVE

b. Mechanical Services: Same address.

(6) Compaction Meter. To investigate a meter on a vibrating roller which would indicate the degree of compaction achieved. Staff. HRIS 41. COMPLETE

(7) Linemarking Alignment System. Investigation of a mirror system on a linemarking machine that would allow center line marking without prior need to place marks on the pavement. P. Jeffreys, B. Wilson. HRIS 41. IRRD 605976. ACTIVE

8. b. (8) Automatic Control of Linemarking Machines. To improve the quality and efficiency of line marking operations by replacing manual methods with automatic controls. P. Jeffreys. HRIS 41. IRRD 605807. ACTIVE

c. Asphalt Division: Same address.

(3) Bituminous Road Surfacing. To provide for more effective treatment of cracked pavements through investigations of materials and procedures for repairing and waterproofing individual cracks, resurfacing of cracked pavements with bituminous sprayed treatment of plant mixed materials without reflective cracking of the new surface, and tests of the suitability of reclaimed rubber as an additive in those treatments. R. Allen, J. Rebbechi. HRIS 40. IRRD 605977. (Citations) ACTIVE

d. Bridge Division: Same address.

(1) Tendon Losses, Distribution of Loads, Differential Thermal Effects and Long-Term Creep Effects in a Post-Tensioned, Segmental, 3-Cell Box Girder Bridge of Serial Construction. Detailed study using embedded acoustic gauges, demountable mechanical gauges, and embedded thermocouples. A. F. Griffith, R. M. Atkins. HRIS 25. COMPLETE

(6) Evaluation of Corrosion Characteristics of Steel Piling. (1) Steel H-section piles to be driven in selected locations and subsequently extracted at suitable intervals for examination; (2) hollow steel sections to be driven in selected locations and reduction in wall thickness to be measured by ultrasonic means. P. J. Balfe. HRIS 34. COMPLETE

(7) Bridge Design Methods Research. To produce design methods that will provide accurate estimates of prestressing loss in beams and girders; provide reliable estimates of temperature stresses in super-structures; and establish accurate method for predicting behavior of elastomeric bearings. H. Kayak, J. Thomas. HRIS 25. IRRD 605994. ACTIVE

(8) Service Behavior of Prestressed Concrete Box Girder Bridges. Study of tendon losses, distribution of loads, differential thermal effects and long term creep effects in post-tensioned box girder bridges. J. D. Thomas. HRIS 27. COMPLETE

(9) Bell Street Bridge Investigations. Determination of tendon losses, load distribution differential thermal effects and creep effects in a post-tensioned segmental three cell pre-stressed concrete box girder bridge of serial construction. R. Atkins, J. Thomas. HRIS 25. COMPLETE

(10) Epoxy Resin Between Bridge Segments. An evaluation of the use of epoxy resins as a suitable adhesive for single cell concrete segments. S. Mokos, K. Williams, B. Bromham. HRIS 34. IRRD 605800. COMPLETE

(11) Use of Models to Investigate Flood Conditions. Use of models to simulate flood conditions at river crossings where complex flooding patterns occur. G. W. Wigg, G. McLellan. HRIS 22. IRRD 605799. ACTIVE

(12) Modulus of Elasticity of Concrete in Large Precast Bridge Segments. To verify that performance of full size units can be predicted from laboratory tests on concrete specimens. H. Kayak, B. Bromham. HRIS 25. IRRD 605798. ACTIVE

e. Road Planning Division: Same address.

(2) Recreational Travel in Victoria. A study to provide a means to anticipate growth in recreational travel, which includes a method by which recreational demand considerations can be included in the estimates of capacity requirements. A. Pommers, N. Crompton. HRIS 55. (Citations) COMPLETE

8. e. (3) Project Evaluation Study. A study to improve techniques for comparing alternative proposals for a major road facility in any urban area, giving due consideration to all relevant factors - engineering, economic, social and environmental - whether quantifiable or "intangible." G.E. Herbert. HRIS 17. COMPLETE

(4) Trip Distribution Models. To improve existing trip prediction, distribution and assignment models and determine orders of accuracy of trip prediction. D. Ferguson, J. Ford. HRIS 55. IRRD 605806. (Citations) INACTIVE

(5) Economic Evaluation Techniques. To improve the procedures used for economic evaluation of rural and urban road projects. B. Van Every, B. Grayling, A. George. HRIS 15. IRRD 605805. INACTIVE

New Projects

(6) Computer Procedures for Transportation Planning. To improve transportation planning and techniques and models relating to traffic assessment and traffic assignment. D. Ferguson, D. Farrow, J. Ford. HRIS 12. IRRD 605979. ACTIVE

(7) Energy Considerations in Transport. To keep abreast of the energy situation as it may affect a state road authority and to reconcile estimates of future traffic with forecasts of transport energy availability. A. Boyd, M. Atchison. HRIS 17. IRRD 605980. ACTIVE

f. Plans and Surveys Division: Same address.

(1) Computer Techniques for Road Design. To relieve designer of routine tasks, ensure designer of complete design responsibility, simulate procedures, store information and provide output suitable for plan and specification production. H. Mok, B. Unthank, F. Morton. HRIS 21. IRRD 605995. (Citations) ACTIVE

(2) Hydraulic Design of Roadside Drainage Systems. To develop criteria for the design of roadside drainage structures, such as drainage pits, culverts, underground systems, and scour prevention. A. Evans, I. Relph. HRIS 22. IRRD 605810. (Citations) ACTIVE

New Project

(3) Photogrammetry Development. To develop an integrated system of data acquisition employing computer technology, aerial and terrestrial photogrammetry and automated plotting techniques. D. Bird, P. Coxon. HRIS 21. IRRD 605981. ACTIVE

g. Traffic Engineering Division: Same address.

(2) Effects of Traffic Engineering Measures on Traffic Accident Rates. To evaluate in terms of accidents the effectiveness of traffic engineering measures, with before-and-after data. K. C. Hastings. HRIS 51. COMPLETE

(3) Statewide Annual Traffic Census. Traffic data collection (urban and rural). Manual count on 1 day per year. I. Mackintosh. HRIS 55. IRRD 605982. (Citations)

(4) Statewide Automatic Traffic Counting Program. (1) Collection of traffic data by automatic machines (rural); (2) production of AADT profiles. I. Mackintosh. HRIS 55. IRRD 606612. ACTIVE

8. g. (5) Manual Collection of Traffic Study Data. Origin and destination surveys; manual traffic counts for planning and investigation purposes (mostly urban). I. Mackintosh. HRIS 55. IRRD 605996. (Citations) ACTIVE

(6) Traffic Volume Speeds and Lane Use on Urban Roads. Collection of traffic volume, speeds and lane use data on urban roads and freeways. Staff. HRIS 55. COMPLETE

(7) Effects of Specific Control Measures on Traffic Operations and Accident Recurrence. Research into the effect of pavement markings, channelization treatments, types, warning and other signs, and similar minor improvements. Staff. HRIS 54. COMPLETE

(8) Effect of Sub-Area Control Systems. To develop a coordinated traffic control system with traffic-responsive master controller in three areas. (Trams and buses are involved to a minor degree. HRIS 54. COMPLETE

(9) Traffic Conflict Studies. Test applicability of USA and UK study techniques and determine if any modifications can be made to improve them. K.C. Hastings. M. D. Atchison. HRIS 55. COMPLETE

(10) Effect of Subarea Traffic Signal Control Systems. To develop a coordinated traffic control system with traffic responsive master controllers for application in three Melbourne areas. K. Burke, C. Morram. HRIS 54. COMPLETE

(11) Staggered T-Intersections. Examine these intersections in rural areas with relation to accident incidence. K. Hastings, A. O'Brien. HRIS 51. COMPLETE

New Projects

(12) Traffic Accident Reduction System. To identify adverse features of road characteristics and provide traffic engineering techniques to reduce accidents. I. Middleton. HRIS 51. IRRD 605983. ACTIVE

(13) Traffic Engineering Warrants and Guidelines. To develop a more cost effective approach to traffic problem solving by preparation of warrants and guidelines covering the use of various traffic engineering measures and devices for design purposes. I. Middleton. HRIS 12. IRRD 605984. ACTIVE

h. Advance Planning Division: Same address.

(1) Road Inventory Data Base. To provide up-to-date inventory data such as traffic volume, widths, etc., for use in financial and strategic planning for system development. R. C. Stuart, T. d'Amico, G.A. Cook. HRIS 11. IRRD 605808. ACTIVE

i. Environmental Studies Section: Same address.

(1) Effects of Urban Arterial Road Widening. A before and after study of owners displaced by a major urban arterial road widening so as to improve planning and land acquisition practices. S. Ackroyd. HRIS 15. IRRD 605809. COMPLETE

9. MAIN ROADS DEPARTMENT, WESTERN AUSTRALIA: Waterloo Crescent, 6000, East Perth, Western Australia

(17) Computer Program for Highway Design. Development and improvement of programs with emphasis on geometric design and earthwork calculations using digital terrain models. R. S. Purdie. HRIS 21. COMPLETE

(23) Urban Transportation Planning Model. To recalibrate urban transport planning models with the existing models, and to introduce additional flexibility to cater for future planning alternatives such as the effect of increased fuel costs. E.R. Lloyd. HRIS 13. ACTIVE

9. (24) Rural Transportation Studies. The development and calibration of a Statewide traffic forecasting model using computer-oriented traffic assignment techniques for the prediction of future traffic volumes on the rural road system. R. Kaesehagen. HRIS 55. INACTIVE

(27) Road Accident Studies. To provide quantitative data on computerized basis on road accidents for identifying accident prone land locations: planning, design and traffic management. P. Willet. HRIS 51. ACTIVE

(29) Optimum Replacement Policy for Earthmoving Equipment. Use of available theoretical techniques and information from existing records to develop a management system for optimizing plant replacement decisions. W. Nelli, V. Johnston. HRIS 41. IRRD 606903. (Citations) ACTIVE

(30) Prediction of the Behavior of Embankments on Highly Compressible Soils and Waste Materials. Development of methods by which the future behavior of embankments on highly compressible material can be predicted to allow remedial measures to be applied which will avoid having to remove the existing material. G. Cocks, J. Gerrard. HRIS 62. IRRD 606904. (Citations) ACTIVE

(31) Design Methods for the Stabilization of Soils and Soft Rocks for use as Pavement Base Course. Establishment of a method whereby the bitumen content of bituminously stabilized materials can be chosen as an optimum to produce the desired change to selected properties of the original material. G. Hamory. HRIS 62. IRRD 606905. (Citations) ACTIVE

(34) Development of Improved Bitumen Tankers and Distributors. To investigate temperature gradients in bitumen storage tankers to provide basic information for the redesign of these tankers to minimize damage caused by overheating. Development of a mechanism which will allow the spraybar to be maintained at a constant height above the road surface, together with a mechanism which will allow the spraybar length to be altered while spraying to produce tapered sections. W. Nelli, I. Tevlin. HRIS 41. IRRD 606906. ACTIVE

(37) Creep and Shrinkage Characteristics of Prestressed Concrete Using Perth Aggregates and Cement. To establish realistic figures of creep and shrinkage and compare this with published values in the N.A.S.R.A. Design Specification, the results to be used in predicting prestress losses to a greater accuracy and providing more economical use of prestressing steel. P. Wyche, A. Van Der Meer, G. C. Smith. HRIS 25. IRRD 606978. ACTIVE

(40) Traffic Noise Prediction. To develop a method of predicting noise generated by traffic. R. Leach, P. Gunn. HRIS 17. ACTIVE

(41) Temperature Distribution in Box Girder Bridges. Measurement of temperature distribution for design of structures in high summer temperature regions. G. C. Smith. HRIS 25. COMPLETE

(44) Steel Fiber Reinforced Concrete. To develop a mix for steel fiber reinforced concrete and assess its insitu performance in bridge expansion joint nosings and in concrete decking of rejuvenated timber bridge decks. P. M. Palmer. HRIS 32. COMPLETE

(46) Development of Design and Construction Procedures for Special Purpose Bituminous Concretes. To establish design properties that must be achieved so that the benefits of satisfactory skid resistance can be obtained with or without a free draining surface. R. Leach, G. Skender. HRIS 31. ACTIVE

9. (47) Local Methods of Flexible Pavement Design. Develop methods of assessing strength of natural and manufactured granular materials for pavements in a wide range of environments and investigate methods of establishing structural adequacy of existing pavements. G. Cocks, G. Hamory, W. Gray. HRIS 24. IRRD 606934. ACTIVE

(48) Quality Control Procedures for Road Building Materials and Road Practices Construction. To develop statistical methods of quality assurance for materials and procedures and investigate equipment appropriate to such control methods. L. W. Goodram, G. Cocks, R. Leach. HRIS 33. IRRD 606907. (Citations) ACTIVE

(49) Health Hazards to Personnel on Road Construction. To develop methods of measuring and reducing detrimental health effects of noise, vibration, and fumes in construction operations. R. Leach, M. Limb. HRIS 51. IRRD 605369. ACTIVE

(50) Assessment of Strain-Guage Systems. To compare the relative merits of several proprietary instruments for measuring strains. K. C. Michael, T. White. HRIS 25. IRRD 605840. ACTIVE

(51) Monitoring of Bridge Movements. To develop a simple means for periodic monitoring of bridges such that more accurate assessments can be made of bearing and joint performance. K. C. Michael, D. Cheong. HRIS 25. IRRD 605839. ACTIVE

(52) Driving Effects on Composite Column Concrete Piles. Assessment of performance under driving conditions of various composite piles designs, both those composite in section or in length. K. C. Michael, J. Pressley. HRIS 25. IRRD 605838. ACTIVE

(53) Strength Curves for Concrete Mix Design. Assessment of the effect of variations in mix design on strength of concrete, based on analysis of control specimens from various projects. P. M. Palmer, J. J. Harvey. HRIS 32. IRRD 605837. ACTIVE

(54) Analyses of Runoff on Small Catchments. Evaluation of most suitable method for estimating runoff from small rural catchments and determinations of appropriate coefficients from stream guaging data. P. M. Palmer, D. Flavell. HRIS 22. IRRD 605836. ACTIVE

(55) Footbridge Vibrations. To measure frequency, amplitude, acceleration and damping characteristics of some 20 footbridges under various pedestrian groups and compare vibration parameters with calculated values. J. E. Wheeler. HRIS 25. IRRD 605835. COMPLETE

(56) Ground Vibration from Traffic and Construction. A study of the relationship between vibration levels, building damage, people reaction and limits above which undue discomfort or damage may occur. M. J. Limb, R. Leach. HRIS 25. IRRD 605834. ACTIVE

New Projects

(57) Localized Commercial Vehicle Equivalencies for Western Australian Traffic in 1980. An investigation of changes in equivalent standard axles brought about by changes in mass and axle loadings in Western Australia. G. Cocks, J. Harvey. HRIS 12. IRRD 606908. (Citations) ACTIVE

(58) Placing Portland Cement at High Temperatures. Effect of concrete placement at 20° - 40° will be investigated for strength and workability. W. Nielsen, P. Palmer. HRIS 32. IRRD 606909. ACTIVE

AUSTRALIA (contd)

New Projects

9. (59) Comparison of Creep, Shrinkage Prediction Models. To develop a computer program which would include several well known creep and shrinkage predictive models, with capacity to add further models and data. P. Wyche, K. Michael. HRIS 32. IRRD 606910. FUTURE

(60) The Use of Glass Reinforced Concrete (GRC) in Small Earth Retaining Walls. To study use of glass reinforced concrete "skin" in cantilivered retaining wall, as well as moment transfer to footing and creep. J. Wheeler. HRIS 32. IRRD 606911. FUTURE

(61) Installation and Monitoring of Strain and Temperature Guages in Mt. Henry Bridge. A 76 m. box girder bridge will be instrumented to obtain field measurements of creep, shrinkage and temperature effects. P. Wyche, D. Snook, K. Michael. HRIS 25. IRRD 606912. ACTIVE

(62) Derivation of Runoff Routing Parameters for Western Australian Catchments. By using known storm runoff data and a runoff routing model an evaluation will be made of parameters for general use on unguaged catchments. D. Flavell. HRIS 22. IRRD 606913. (Citations) ACTIVE

(63) The Design of Vehicle Arrestor Beds. A study of the most pertinent parameters for design, placement and construction of arrestor beds (runoff or escape ramps). G. Cocks, J. Gerrard. HRIS 21. IRRD 606914. (Citations) ACTIVE

(64) Accident Records System. Further development of the Main Roads Departments computerized traffic accident record system with intention of developing priorities for road safety improvements. P. Willett. HRIS 51. IRRD 606935. ACTIVE

(65) Accident Data Processing and Studies. A thorough analysis of road accident data with a view to improving road design, planning, maintenance and traffic management and setting of priorities for safety treatments. P. Willett. HRIS 51. IRRD 606936. (Citations) ACTIVE

(66) Rural Traffic Survey. A thorough rural traffic survey which will be used in road planning, economic analysis of projects, traffic control and input to Department's technical data bank. J. Fischer. HRIS 12. IRRD 606937. ACTIVE

(67) Urban Traffic Survey. A traffic survey in the Perth urban area to be used for design, planning, traffic management, various aspects of project requirements for a complete traffic survey. P. Willett. HRIS 12. IRRD 606938. (Citations) ACTIVE

(68) Environmental Impact of Traffic Noise and Air Quality. To improve the accuracy of road traffic noise prediction and improvement of air quality standards in an urban area. R. Leach, M. Limb. HRIS 17. IRRD 606939. (Citations) ACTIVE

10. UNIVERSITY OF NEW SOUTH WALES: Anzac Parade, 2033 Kensington, New South Wales.

a. School of Highway Engineering: Same address.

(1) The Effects of Repeated Loading on Road Materials. Development of automatic equipment to record repeated loads, measure volume change, etc. Aspects studied include permanent strain, recoverable strain, damping energy and damping factors, effects of temperature, etc. B. Shackel, W. O. Yandell. HRIS 63. COMPLETE

(30) Panoramic Perspectives. Development of simple - more useful - manual method for construction of perspectives. T. ten Brummelaar. HRIS 21. COMPLETE

10. a. (40) Approximate Models in the Analysis of Multibeam Bridge Decks. The development of a variable position, single hinge shear transfer model for the analysis of multibeam bridge decks. P. Jones, P. Hagan, G. Moir. HRIS 25. COMPLETE

(50) Rheological Properties of Soils Subjected to Repetitive True Triaxial Loading. Development of a cubical triaxial apparatus to investigate stress-strain properties of unbound pavement materials. B. Shackel, K. Makiuchi. HRIS 35. COMPLETE

c. School of Transportation and Traffic: Same address.

(11) Points of Concentration Surveys in Urban Areas. To test efficacy of travel surveys at points of concentration of workers, shoppers, etc. R. D. Munro. HRIS 16. COMPLETE

(26) Evaluation of Urban Road Projects. Development of a conceptual framework for an improved mode. W. R. Blunden, D. J. Buckley, R.D. Munro, J. I. Tindall. HRIS 15. COMPLETE

(27) Economic Analysis of Accidents. Determination of a function for the cost of accidents on various types of roads with respect to traffic flow. J. I. Tindall. HRIS 16. INACTIVE

(28) Lighting Requirements of Freeways. Basic requirements for optimum lighting of freeways with reference to practical limits, conflict points and usage of headlights. A. Fisher, H. Turner, R. Hall. HRIS 21. COMPLETE

(32) Queueing Phenomena at Sydney International Airport. Study of internal road traffic movements with particular reference to check-in departure lounge and baggage handling facilities. M. C. Dunne, C. Vanichavetin, R.C. Hupp. HRIS 55. COMPLETE

(33) Queueing Phenomena with Time Dependent Inputs. To investigate queueing behavior in non-steady state traffic conditions, and to look at the formation and duration of peak demands. D. J. Buckley, D.L. Minh, E.H. Pollnow, W.R. Blunden. HRIS 55. COMPLETE

(34) Requirements for Street Lighting Systems. Examination of the need for urban roads to be lit to above SAA code standard, and the conditions under which rural roads should be lit. H. J. Turner, P.C. Skene. HRIS 21. COMPLETE

d. Department of Structural Engineering: Same address.

(11) Optimum Design of Structures. Investigation of mathematical programming and similar techniques for the optimum design of structures, the investigations largely covering bridge structures with some work on RC beams. L. S. Edwards, N. vanHue. HRIS 25. (Citations) COMPLETE

(12) Stability and Vibration Analysis by Finite Elements. Solution of bifurcation problems: elastic buckling of space frames and trusses, plates and plate girders; vibration of frames and plates, effects of axial stresses on free vibration. Post-buckling behavior of frames and plates, geometrically non-linear structures. A.P. Kabaila, R. Lawther, V.A. Pulmano, R. J. Edwardes, P. Ah Cann. HRIS 25. (Citations) ACTIVE

(13) Anchorage Zone Stresses in Prestressed Concrete Beams. Use of two dimensional finite element analysis to study stresses in multi-anchorage end blocks in prestressed concrete beams and devise a practical method for designing end block reinforcement. K. A. Faulkes. HRIS 25. ACTIVE

10. d. (14) Reinforced and Prestressed Concrete - Limit Design of Slabs. Development of a lower-bound limit design procedures for reinforced concrete slabs, the slabs to be orthotropically reinforced and have various boundary conditions. B. V. Rangan. HRIS 25. COMPLETE

(15) Torsion, Bending and Shear in Reinforced and Prestressed Concrete Beams. Tests to confirm or modify rules for the SAA code and to determine with more certainty the limits on steel quantities. A. S. Hall, B.V. Rangan, R. Staley. HRIS 25. ACTIVE

(17) Creep and Shrinkage Effects in Concrete Structures. Analytical studies of creep and shrinkage effects in beams, columns and slabs of reinforced concrete and prestressed concrete, and develop computer simulation programs. R. F. Warner, I. R. Gilbert. HRIS 25. (Citations) ACTIVE

(18) Analysis of Simply Supported Box Girder Bridges. An analysis of simply supported box girders considered as an assemblage of plates, using the folded plate theory which considers both the membrance and bending action of the plate elements. V.L. Pulmano. HRIS 25. COMPLETE

(19) Study of Collapse of Box Girder Bridge. Applications of reliability to a multispan bridge, to aid in determining structural integrity of remaining portion, after loss of one span. A. C. Heaney. HRIS 25. (Citations) ACTIVE

(21) Limit State Design of Bridges. Existing bridges and similar structures are analyzed to find the load factors they provide against recommended load factors in order to assess the applicability and economy of the method of design. L.S. Edwards. HRIS 25. COMPLETE

(22) Servicability of Partially Prestressed Construction. Analysis of behavior of lightly prestressed beams under short-term and sustained loads large enough to cause flexural cracking. R.F. Warner, K.A. Faulkes. HRIS 25. COMPLETE

(23) Optimization in Steel Box Girder Tolerances. L.S. Edwards. HRIS 25. COMPLETE

e. School of Physics; Same address.

(5) Construction of a Night Driving Simulator. To use a moving-road simulator for researching aspects of driver's sleep and somnolence. C. J. Milner. HRIS 51. INACTIVE

(7) Computer Simulation of Vehicle Control. Computation of transverse and longitudinal accelerations of a vehicle and printing each second the position, speed, etc. of the vehicle. C. J. Milner. HRIS 53. ACTIVE

f. School of Civil Engineering: Same address.

(3) Field Studies of Pavement Deformation and Deflection. A systems approach to pavement design involving installation of deformation gauges in an actual stabilized pavement subjected to substantial traffic. I. K. Lee, O.G. Ingles. HRIS 24. ACTIVE

(4) Automated Studies of Brittle Fracture in Soil Materials. Use of a 100 ton servo-controlled loading frame to study multilayered pavement structures, using variable controlled stress ratios, with some followed to failure. O. G. Ingles, S. Hain. HRIS 24. INACTIVE

(6) Premix Polymer Cement Concrete. Examination of the possibility of using various polymers in concrete to improve strength and durability. D. R. Morgan, D. J. Cook, R. P. Chaplin, V. Sirivivatnanon. HRIS 32. ACTIVE

10. f. (7) Improvement of Soft Soils by Lime Piling. A study of the feasibility of using quicklime for deep stabilization of very soft saturated sediments below heavy duty pavements. I. K. Lee, O.G. Ingles, P. Vishnu. HRIS 62. ACTIVE

(9) Study of Pavement Deflections. To design and construct equipment suitable for the acquisition of necessary field data. R. J. Keith, W. H. Coghill. HRIS 24. ACTIVE

(10) Stress/Dilatancy Relationship in Non-Cohesive Granular Materials. To derive and prove a quantitative relationship between resistance to shear of, and the volume occupied by the particles. W.H. Cogill. HRIS 63. ACTIVE

(11) Creep and Shrinkage in High Strength Concrete. To investigate the creep and shrinkage of high strength concrete for use in prestressed bridge construction in view of the variables associated with Australian materials and climatic conditions. B.F.J. Patten, D. R. Morgan. HRIS 32. ACTIVE

(14) Mathematical Modeling of the Storm Runoff Hydrograph. To synthesize runoff hydrographs by means of a runoff-routing model developed from the Laurenson model. D. H. Pilgrim, I. Cordery, M. J. Boyd (Dept. of Water Eng.). HRIS 22. ACTIVE

(17) Probabilistic Cost Benefit Studies of Road and Rail Track Maintenance. An analysis of data on maintenance operations and expenditures for pavements and rail track to determine optimum and probabilistic techniques for evaluation of cost benefit factors and to apply these techniques to the national design of pavement and rail track maintenance strategies. O. G. Ingles, A. M. Rutten, J. C. Stead, B. Stephens. HRIS 40. ACTIVE

(18) Development of Pavement Design Methods. A study of deflection for the design and control of pavement construction, using a simplified elastic theory for the analysis of the Benkelman beam deflection and repeat load triaxial equipment for the characterization of pavement materials. O. G. Ingles, P.G. Rufford. HRIS 24. ACTIVE

(19) The Influence of Layout and Management Policies on the Productivity of Material Flow Processes on Construction Sites. To establish current practice at the planning levels and to develop improved practical techniques suitable for both head office and field agents. R. W. Woodhead, C. C. Birdsall (Dept. of Eng. Const. and Management). HRIS 33. ACTIVE

(20) Factors Affecting Performance and Production of Modern Heavy Duty Blast-Hole Rock Drills on Construction Sites. To investigate and evaluate all the factors affecting the output of modern heavy duty drilling machines used in quarries and civil engineering construction sites for the production of blast holes in rock so as to establish standard Drillibility Indices for various classes and types of rocks. J. M. Antill, V. J. Summersby (Dept. of Eng. Const. and Management). HRIS 41. ACTIVE

(21) The Contribution of Hysteresis to Rolling and Sliding Resistance of Road Wheels. To assess the stress distribution and rolling resistance resulting from a hypothetical wheel rolling across a road material or skidding across a simulated road asperity. W. O. Yandell. HRIS 53. ACTIVE

(22) Measurement of Surface Texture of Road Stones with Particular Reference to the Effect on Frictional Properties. Using Yandell's mechano-lattice analogy to study the rubber-roadstone interface action; build a stylus instrument to measure the three dimensional micro-surface geometry of roadstones. etc. W.O. Yandell. HRIS 35. ACTIVE

10. f. (23) Influence of Surface Texture on Friction Coefficients of Road Surfaces. Comparison of actual friction characteristics with those predicted by a theory of hysteretic sliding friction. W.O. Yandell, L. Holla. HRIS 24. ACTIVE

(24) Influence of Surface Texture of Roads on Tire Abrasion. Laboratory test results on the effects of surface textures, speed, load, lubricant and rubber properties will be assessed and compared with those predicted by stress analysis. W. O. Yandell, M. K. Gopalan. HRIS 24. ACTIVE

(25) Use of Terrain Maps for Road Engineering Purposes. To define reliability of maps for pavement and other engineering works and also the most economical design section for pavements. O. G. Ingles, G. Tammadoni. HRIS 21. ACTIVE

(26) Thermal Stabilization for Pavement Bases. To develop a new travelling machine for insitu thermal stabilization of any soil. O. G. Ingles, Nam Lim. HRIS 62. ACTIVE

(29) Effects of Vehicle Braking on Dynamic Loading of Bridges. An examination of the dynamic impact factors to be applied to bridge loadings to cover the effects of vehicle braking and bouncing. R. Traill-Nash. HRIS 25. IRRD 605790. COMPLETE

(31) Pavement Maintenance and Rehabilitation Management. To establish procedures for evaluating pavement condition and provide for priority decisions and rehabilitation techniques to be used. I. K. Lee, J. Yeaman. HRIS 40. IRRD 605898. (Citations) ACTIVE

New Projects

(32) Bridge Loading Programme (N.S.W.). A study will be made of effects on a bridge of heavy vehicle braking, normal in-service loads, and overload conditions. P. Balint, K. Faulkes, V. Pulmano. HRIS 25. IRRD 606950. (Citations) ACTIVE

(33) Post-Cracking Behavior of Partially Prestressed Concrete Construction. To obtain data on service load behavior of partially prestressed concrete beams for the purpose of controlling cracking and deflection. V. Pulmano, K. Faulkes, R. Gilbert. HRIS 25. IRRD 606979. (Citations) ACTIVE

i. School of Metallurgy: Same address.

(1) Effect of Weld Metal Strength on the Fatigue Properties of Fillet Welds. To establish whether there is a relationship between weld metal strength and the fatigue strength of the fillet weld and to investigate possible relationship with flux type. D.J. H. Corderoy, J. A. Taylor, P. Ford. HRIS 34. (Citations) COMPLETE

(2) The Welding of Reinforcing Bars. To assess the weldability of the two most commonly used steels and establish prequalified welding procedures and design characteristics, to be the basis for standards revision. D.J. H. Corderoy, H. Pearson. HRIS 34. IRRD 605900. ACTIVE

j. School of Transport and Highways: Same address.

(1) Retroreflective Delineation of Rural Traffic Areas. To determine visibility requirements, performance specifications, and disposition of retroreflective devices, and thus provide a guide for night delineation of rural routes. A. J. Fisher, R. R. Hall. HRIS 54. IRRD 605370. ACTIVE

New Projects

10. j. (2) Land Use and Transport Policy in S.E. Asian Cities. To compare and contrast land use and transport in different cities and to describe how land use and transport policies are changing the structure of these cities. J. Black. HRIS 12. IRRD 606668. (Citations) ACTIVE

(3) Traffic Capacity Urban Streets. Measurement of travel times as affected by number of lanes, frequency of intersections, flow/capacity ratio, geometrics, parking, speed limits, buses and trams, etc. M. C. Dunne, C. Vanichavetin. HRIS 55. IRRD 606635. ACTIVE

(4) Mathematical Programming in Land Use/Transport Planning. A model based on the Transportation Problem of Linear Programming with land use constraints, with further development of a complete model of land use, generation, desire line and assignment sub-models. W.R. Blunden, W.R. McDonald, M. B. Colston, R.C. Holland, G.M. Connor. HRIS 12. IRRD 606669. ACTIVE

(5) Accessibility of Urban Land Uses. To study effects of spatial location and transport facilities on accessibility to work, shops, school and recreational facilities. W.R. Blunden, J.A. Black, M. Conroy. HRIS 15. IRRD 606670. ACTIVE

k. School of Town Planning: Same address.

(1) Supplementary Personal Transport in Urban Areas. To encourage the development in urban areas of low-energy, low-cost forms of personal transport, supplementary to the car. E. D. Duek-Cohen, and others. HRIS 16. IRRD 605899. (Citations) ACTIVE

11. UNIVERSITY OF SYDNEY: Sydney 2006, New South Wales

a. School of Civil Engineering: Same address.

(11) The Behavior of Strip and Raft Footings. To develop design tables and techniques for flexible strip and raft footings. E.H. Davis, P.T. Brown. HRIS 23. COMPLETE

(12) Application of Theories of Plasticity to Frictional Cohesive Soils. To study the applicability of plastic theories to the behavior of frictional soils with special attention to stresses in granular embankments. E.H. Davis, J. Booker. HRIS 62. ACTIVE

(18) The Settlement of Pile Groups. To analyze the behavior of axially loaded pile groups in clay. E.H. Davis, H.G. Poulos. HRIS 62. COMPLETE

(20) The Behavior of Composite T Beams under Repeated Loading. To determine the behavior of concrete slab-steel joist beams under loads ranging from zero to maximum applied at a frequency of 30 cycles per minute. J. W. Roderick, P. Ansourian. HRIS 25. COMPLETE

(22) Behavior of Composite Columns. To develop an analytical method to forecast load deformation relationship and maximum load carrying capacity of pin-ended composite steel columns encased in concrete loaded eccentrically, and continuous composite steel columns encased in concrete, in rectangular space frames. J.W. Roderick, R.Q. Bridge, J. M. Rotter. HRIS 25. IRRD 606951. (Citations) ACTIVE

(23) Connections in Composite Structures. To study the moment-rotation characteristics and ultimate movement properties of rigid connections between T type composite beams and concrete encased steel columns. J.W. Roderick, P. Ansourian. HRIS 25. COMPLETE

11. a. (24) Behavior of Laterally-loaded Piles. Studies of model piles and theoretical investigations of behavior under lateral load. E. H. Davis, H. G. Poulos. HRIS 25. COMPLETE

(25) Fundamental Settlement Behavior of Soils. Predictions of settlement taking into account the effects of creep and of anisotropy. E.H. Davis, H. G. Poulos, J.R. Booker. HRIS 62. IRRD 606952. ACTIVE

(26) Laboratory Test Track. To predict the stress and displacement behavior of pavement materials into the plastic range and to assess the value of non-standard pavement materials. E.H. Davis. HRIS 24. ACTIVE

(27) Reduction of Cracking in Concrete. To examine and collate available information for the control and reduction of cracking by design and construction procedures. D. Campbell-Allen. HRIS 32. COMPLETE

(28) End Block Design. To investigate the behavior of concrete in anchor zones and to develop appropriate design rules. D. Campbell-Allen, R.J. Wheen. HRIS 32. IRRD 605795. ACTIVE

(29) Stresses Around Underground Openings and the Effect of Rock Bolts. An evaluation of the stresses due to a multiple installation of rock bolts with a prediction of the stresses near the end of a tunnel using elastic theory, with an extension of the theory to take account of yielding of the rock and the effects of anisotropic strength due to defects in the rock body. E.H. Davis, P. J. N. Pells. HRIS 63. COMPLETE

New Projects

(33) Brittleness of Cold Formed Hollow Sections. To investigate the brittle fracture characteristics of cold formed hollow sections and assess the effect on behavior of various weld attachments. A. Abel. HRIS 34. IRRD 606923. ACTIVE

(34) Precast Prestressed Concrete Trough Section Girder Decks for Road Bridges. To develop a standardized bridge system based on standard components for bridges in the 15-35 M. range where maximum flexibility of construction and usage is paramount. D. Campbell-Allen, R. Wheen, T. Anderson. HRIS 25. IRRD 606940. ACTIVE

(35) Deformation and Failure of Soil and Rock Masses. To analyze behavior of pad. raft and pile foundations; upgrade analysis of methods to improve use of soft soils; to analyze foundations under cyclic and dynamic loads; to gain knowledge of bearing capacity jointed rocks, etc. E. Davis, H. Poulos, P. Brown. HRIS 63. IRRD 606953. ACTIVE

(36) Determination of Soil Modulus Using Plate Load Tests. To study soil deformation modulii using in-situ plate load tests, usually at the bottom of a bore hole. P. Brown, A. Marsland, HRIS 63. IRRD 606954. ACTIVE

(37) Prestressed Concrete Cantilever Bridges. Field data on various parameters (creep, shrinkage, etc.) of prestressed concrete cantilever bridge construction will be compared with theoretical predictions. D. Campbell-Allen, R. Smith, G. Bott. HRIS 25. IRRD 606955. ACTIVE

(38) Corrosion of Steel in Concrete. To study corrosion of steel in concrete in structures and laboratories under cyclic loading in adverse (marine) environment. H. Roper. HRIS 34. IRRD 606956. ACTIVE

(39) Effect of Rate of Loading on Foundation Behavior. To examine the effect of rate of loading, including cyclic loading, on load carrying and load deformation behavior of pad and pile foundations. E. Davis, H. Poulos. HRIS 63. IRRD 606957. (Citations) ACTIVE

New Project

11. b. Department of Pharmacology: Same address.

(1) Alcohol, Drugs and Accident Risk. To investigate the effect of drugs and alcohol, alone and in combinations, on skills related to driving. G. Starmer. HRIS 52. IRRD 605997. (Citations) ACTIVE

12. UNIVERSITY OF ADELAIDE: North Terrace, Adelaide, South Australia 5001

b. Department of Mathematics: Same address.

(11) Bus Scheduling. To find good rules for scheduling buses in Canberra. F.J.M. Salzborn, N. Holcroft. HRIS 11. COMPLETE

c. Department of Civil Engineering: Same address.

(11) End Zone Stresses in Pretensioned Prestressed Beams. Study of shear strength loss when debonding of tendons is employed (experimental), and of stress distribution due to prestress in end zone - finite element analysis (3D) verified experimentally, as well as effects of fatigue loading. D. B. Crawley. HRIS 25. INACTIVE

(12) Analysis of Multicell Box Girder Bridges. To review critically existing methods of analysis of multicell box girder bridges and to investigate the application of finite element analysis techniques. Y. K. Cheung, S. K. Maitra, K.E. Moxham. HRIS 25. INACTIVE

(13) Vibration of Box Girder Bridges. Vibration studies on Multicell Straight and Curved Box Beam Bridges. Y. K. Cheung, G. Sved. HRIS 25. INACTIVE

(15) Stability of Continuous Bridge Decks. Finite strip method used to study linear stability of continuous flat-walled structures. C.R. Delcourt, Y. K. Cheung. HRIS 25. (Citations) COMPLETE

(16) Dynamic Response of Continuous Curved Box Girder Bridges to Heavy Vehicles. A finite strip-based procedure is being developed to predict displacements, stresses and accelerations in bridges subjected to heavy accelerated loading. S.G. Hutton, M. J. Short, Y.K. Cheung. HRIS 25. COMPLETE

(17) Damping and Dynamic Response of Bridges. To investigate the damping of large civil structures such as highway bridges, and study the dynamic responses under travelling loads. K. E. Moxham, S. G. Hutton. HRIS 25. IRRD 606671. ACTIVE

(19) Low Cycle Fatigue of Steel Joints. To study effects of low cycle fatigue on the complex stress distribution on very economical steel joints. K. E. Moxham. HRIS 25. INACTIVE

(20) Low Cycle Fatigue of Reinforced Concrete Joints. To assess fatigue characteristics of such joints under high intensity reversing and non-reversing loads. D.S. Brooks, M.J.S. Hirst. HRIS 25. (Citations) INACTIVE

(22) Shrinkage and Creep of High Strength Concretes. Studies of creep and shrinkage of this concrete made from South Australian aggregates under ambient and standard conditions. D. B. Crawley, M.J.S. Hirst. HRIS 32. IRRD 605788. ACTIVE

(23) Design Charts for Large-Span Metal-Arch Culverts. To develop charts for such culverts with supporting soil property correlations, then to develop an existing finite-element program into a design procedure and verify its reliability. J. Kay. HRIS 25. IRRD 605371. (Citations) ACTIVE

12. c. (24) Design of Corrugated Metal Culverts. To produce a state-of-the-art report on culvert design, conduct tests and evaluate design. J.N. Kay. HRIS 25. IRRD 605880. ACTIVE

New Projects

(25) Solar Heating of Bridges. A computer program has been developed which determines bridge temperature from given bridge and meteorological data and typical bridges have been analyzed for the effects of a 20 year climatic record and the probability of occurrence of given temperatures established. M. Hirst. HRIS 25. IRRD 606672. (Citations) ACTIVE

(26) Interaction of Shear and Direct Stress in Plate Collapse. To determine the interaction of the shear load and direct load on the collapse of steel plates. K. Moxham. HRIS 25. IRRD 606673. ACTIVE

(27) Fatigue Resistance of Partially Prestressed Concrete Members. To obtain test data on the fatigue properties of Australian prestressing strand and develop a probabilistic model of cumulative damage in prestressing steel and a method for predicting fatigue life of partially prestressed members. R. Warner. HRIS 25. IRRD 606674. ACTIVE

d. Department of Mechanical Engineering: Same address.

(4) Electrically Assisted Pedal Bicycle. To develop an electric motor battery combination suitable for attachment to the majority of pedal bicycles to extend their usefulness under adverse conditions of gradient and wind without unduly modifying the bicycle's lightness, simplicity and durability. P.R. Sanderson. H. Bode. HRIS 53. IRRD 605914. INACTIVE

e. Waite Agricultural Research Institute: Glen Osmond, South Australia.

(1) Mechanisms of Soil Aggregation. To determine the factors involved in the formation and bonding of soil aggregates, especially the effect of iron, aluminum oxides and organic materials. R. Shanmuganathan. HRIS 64. ACTIVE

(4) Compaction of Aggregate Beds. To study the effect of compaction on the structure of the beds. A.R. Dexter, M.V. Braunack. HRIS 62. (Citations) COMPLETE

(5) Thixotropic Soil Hardening, Strength Regain after Remolding for Different Soil Materials at Different Water Contents. Strength regain measured as function of time, strength measured by micropenetrometer and consolidation tests. A. Dexter, W.H. Utomo. HRIS 62. IRRD 605856. ACTIVE

(6) Soil Strength Reduction by Wetting and Drying: Strength Reduction as a Result of Natural Water Content Changes. To investigate the effects of soil water content fluctuations on tensile strength of natural soil in the laboratory, and field test to investigate effects of natural wetting and drying. A.R. Dexter, W.H. Utomo. HRIS 62. IRRD 605855. ACTIVE

f. Road Accident Research Unit: Same address.

(3) In-Depth Study of Road Accidents in Metropolitan Adelaide. Evaluation of effectiveness of existing safety measures and identification of factors related to accident or injury causation. A.J. McLean, H.S. Aust. HRIS 51. IRRD 605794. (Citations) COMPLETE

12. f. (4) Evaluation of Effectiveness of a Driver Education and Training Course for Automotive Apprentices. To evaluate the course by using questionnaires before and after the course to both students and control groups, as well as accident experience and attitude evaluations. A. J. McLean, O.T. Holubowycz. HRIS 51. IRRD 605372. ACTIVE

(5) Comparison of Data Collected on Police Accident Reports with Data from an In-depth Study of those Accidents. To assess the value, for research purposes, of the reports compiled by investigating police officers on a sample of serious road accidents. A. J. McLean. HRIS 51. IRRD 605854. INACTIVE

(6) Passenger Car Side Impact Protection. To evaluate the performance of side door design strength in maintaining the structural integrity of the side of the car and protecting occupants from serious injury. A.J. McLean, H.S. Aust, B.L. Sandow. HRIS 53. IRRD 605852. ACTIVE

(7) Survey of Drink Driving in Adelaide to Establish Levels of Accident Risk Related to Blood Alcohol Content. To identify and measure the relevant factors in the association between alcohol consumption and road crash involvement. A.J. McLean, B.L. Sandow. HRIS 52. IRRD 605853. (Citations) COMPLETE

g. Department of Economics: Same address.

New Project

(1) Traveller Decision Making. To collect a data set on travel patterns including constraints and other activities with objective to improve disaggregate travel demand modelling techniques. P. Barnard, M. Wigan. HRIS 13. IRRD 606915. ACTIVE

13. AUSTRALIAN NATIONAL UNIVERSITY: P.O. Box 4, Canberra, Australia

a. The Research School of Social Science, Urban Research Unit: Same address.

(6) The Journey to Work in Sydney. Comparison of the distance travelled to work by origin, destination, occupation and sex. I.G. Manning. HRIS 55. COMPLETE

New Project

(7) Urban Transport Behavior. A study of urban transport behavior in Australia to develop a model describing relationship of transport speed, personal behavior and size and shape of cities. I. Manning. HRIS 12. IRRD 606941. (Citations) COMPLETE

b. Research School of Pacific Studies, Department of Human Geography: Same address

(2) A Comparative Study of Transport Systems. An examination of interregional freight movements within a number of countries (Pacific area) having diverse economies. P.J. Rimmer and others. HRIS 12. COMPLETE

(3) Urban Goods and Commercial Vehicle Movements with Particular Reference to Sydney. To understand the urban goods movement process in Sydney. P.J. Rimmer and others. HRIS 12. (Citations) COMPLETE

(4) Coordinating Freight and Passenger Needs. Investigate better use of transport infrastructure by coordinating freight and passenger needs in time and space in urban areas and utilizing same vehicles and manpower in both roles. C.C. Kissling. HRIS 13. (Citations) COMPLETE

14. UNIVERSITY OF WESTERN AUSTRALIA: Nedlands, Western Australia 6009.

a. Department of Civil Engineering: Same address.

(7) Base Course Evaluation Using an Impact Test. An impact soil tester has been developed and used under both laboratory and field conditions, and distributed for observation in Australia, United Kingdom, New Zealand, Canada and the U.S.A. B. Clegg. HRIS 62. IRRD 606675. (Citations) ACTIVE

(10) Relaxation of Steel. To determine degree of relaxation of steel tendons whose guage length is not a constant. A. van der Meer. HRIS 34. INACTIVE

(11) Creep and Shrinkage of High Strength Concrete. To determine creep and shrinkage parameters. A. van der Meer. HRIS 32. INACTIVE

(13) Shrinkage and Creep Characteristics of W.A. Concretes. To study creep, shrinkage, and aging behavior of Western Australian concretes. D. Clyde, J. Wyche. HRIS 32. IRRD 605373. INACTIVE

(14) Determination of the In Situ Modulus of Sand Using a 9kg Blunt Penetrometer. To correlate the use of this device with the borehole pressure meter, screw plate bearing test. B. Clegg. HRIS 62. IRRD 605879. INACTIVE

New Projects

(15) Use of Self Boring Pressuremeter in Perth Area. To use the SBPM to determine insitu the strength and deformation parameters of soils in the Perth area. R. Jewell. HRIS 61. IRRD 605998. ACTIVE

(16) Concrete Connections for Steel Bridge Beams. To establish the requirements for a negative bending moment connection detail for composite steel and concrete bridge girders by embedment of the steel girder in concrete with minimum steel fabrication and establish a design method. D. Clyde, G. Reynolds, A. Smith. HRIS 25. IRRD 606676. ACTIVE

c. Department of Psychology: Same address.

(15) Drug and Alcohol Interaction on Skills Used in Car Driving. To examine the effects of ethical drugs and alcohol consumption on car driving skills. A. A. Landauer, D.A. Pocock. HRIS 52. IRRD 605999. (Citations) ACTIVE

15. UNIVERSITY OF TASMANIA: P.O. Box 252C, Hobart, Tasmania

a. Civil Engineering Department: Same address.

(1) Application of Field Geometry to Structural Analysis. By new optical methods to measure deformation over a field rather than at isolated points. A.R. Oliver, M.S. Gregory, F. van der Woude. HRIS 25. INACTIVE

(2) Stability of Combination Simple-Infinite Slopes. To prepare charts to aid in the design or analysis of both simple and infinite slopes. B.F. Cousins. HRIS 21. ACTIVE

(3) Suspension Structures. Experimental and analytical investigations of static and dynamic behavior of suspension bridges. M.S. Gregory, F. Van der Woude HRIS 25. ACTIVE

(4) Torsion of Bridge Decks. Experimental investigation of static behavior. M.S. Gregory. HRIS 25. INACTIVE

15. a. (5) Deformation of Arches. To study in-plane deformation of arches, including elastic behavior and in-plane buckling, using small-scale models. F. van de Woude, B.F. Cousins. HRIS 25. IRRD 605374. (Citations) ACTIVE

c. Department of Economics: Same address.

New Project

(1) Re-assessment of Transport Project Evaluation Techniques. To reassess transport project evaluation techniques to determine whether tourism benefits might change transport investment priorities in Tasmania. J. Taplin. HRIS 12. IRRD 606600. ACTIVE

16. UNIVERSITY OF MELBOURNE: Grattan Street, Parkville, Victoria 3052

a. Department of Civil Engineering: Same address.

(2) Stresses and Displacements in Flexible Pavements. To predict stresses displacements of a pavement by a theoretical analysis of layered systems. D.M. Smith, P.J. Moore. HRIS 24. COMPLETE

(13) Optimum Operation of a Combined Line Haul and Feeder Transport System. Determination of a method of operation which performs at the highest possible standard. I. D. Richards. HRIS 11. COMPLETE

(37) Temperature Effects in Bridge Decks. Experimental and theoretical study of distribution of temperature and associated stresses in bridge decks. G. D. Base, L. K. Stevens, J. Thomas. HRIS 25. COMPLETE

(40) The Influence of Rural Highway Geometry on Vehicle Operating Costs. Development of a mathematical model for evaluating road user costs for alternative route locations, considering the influence of grades, curves, etc. D. W. Bennett, J. Dunne. HRIS 21. COMPLETE

(42) Computer-Aided Location of Rural Highways. Development of a system of computer programs to apply dynamic programming to locate economically efficient rural highway segments. D. W. Bennett. HRIS 21. IRRD 606958. (Citations) ACTIVE

(55) Multiple Model Transport Corridors. Study of competitive and complementary aspects of transport service by the different modes in a multiple mode corridor and traveler response to these aspects. D.J. Singleton, D. W. Bennett. HRIS 12. COMPLETE

(56) Patterns of Private Car Usage. Study of usage patterns of individual vehicles in single-car and multi-car households to identify the factors influencing vehicle use characteristics, and to assess the applicability of alternative travel technologies. J.W. Graves, D.W. Bennett. HRIS 16. COMPLETE

(57) Marginal Costing of Transport Improvements. Development and application of a marginal costing procedure for the evaluation of transport improvement projects. R. A. Smith, D. W. Bennett. HRIS 12. COMPLETE

(58) Transport-Land Use Planning in New Urban Areas. Study of different levels of such planning, considering environmental quality and equity in terms of generating different structures. R.C. Bassett. HRIS 15. COMPLETE

(59) Bus Feeder Services to a Modal Interchange. Study of the demand for bus feeder services to a modal interchange, effect on mode and sub-mode choice and economic efficiency of such services. P. Joyce, D.W. Bennett. HRIS 12. COMPLETE

16. a. (60) Evaluation of Rural Highways. Development of a computer program to model effects of earthworks, bridge location and costs and road user costs related to curvature and optimal route location. J.R. Dunne, D. W. Bennett. HRIS 21. COMPLETE

(62) Public Transport in Melbourne, 1976. Study of operation costs and distribution of public transport services. M.D. O'Rourke, N.P. Brown. HRIS 15. COMPLETE

(63) Congestion Pricing in Melbourne. Congestion and road pricing theory reviewed and applied to Melbourne, to estimate likely revenue and effect on travel. D.A. McMenamin, H.P. Brown. HRIS 15. COMPLETE

(64) Effect of Delay on Gap Acceptance. Investigation of the effect of driver-experienced delays on gap acceptance behavior of left-turning vehicles at stop-controlled intersections. C.B. Uber, D.W. Bennett. HRIS 54. COMPLETE

(65) Optimal Location of Modal Interchanges. To determine the optimal size and location of modal interchanges within a transportation corridor. M. J. Kent, D. W. Bennett. HRIS 54. COMPLETE

(66) Disaggregate Modal Choice Model for CDB Travel. Use of individual perceptions of modal characteristics and their incorporation in a model of mode choice. H.P. Brown. HRIS 55. COMPLETE

(67) Traffic Generation Characteristics of Recreational Areas. J. Porter, D.W. Bennett. HRIS 55. COMPLETE

(68) Simulation of Traffic Flows at Intersections. A. Parish, D.W. Bennett. HRIS 55. COMPLETE

(69) Transit Accessibility and Automobile Ownership. Analysis and modelling of factors influencing automobile ownership with emphasis on examination of effect of transit accessibility and alternative opportunities. D.W. Bennett, H.P. Brown, R.C. Bassett. HRIS 16. COMPLETE

(70) Impact Loading on Highway Bridges. Analytical study of factors influencing dynamic amplification of traffic loads on bridge superstructures. D.S. Mansell, J. Moody. HRIS 25. COMPLETE

(71) Behavior of Elastomeric Bridge Bearings. Determination of static properties of bridge bearing rubbers under triaxial loading, and the dynamic properties of bearing assemblies by closed-loop testing machine. D.S. Mansell. HRIS 25. COMPLETE

(72) Feasibility Study of Effects of Welded Stud Shear Connectors on Stiffened Plates. To investigate the residual stresses, distortions and effects of static or fatigue strengths caused by welding studs to thin plates. M. J. Hurst, L. C. Schmidt, L. K. Stevens. HRIS 25. COMPLETE

(73) Mechanisms and Control of Shrinkage and Thermal Cracking in Reinforced Concrete. Experimental and theoretical study and development of procedures for crack control. G.D. Base, M.H. Murray. HRIS 32. COMPLETE

(74) Fatigue Behavior of Welded Stud Shear Connectors. To investigate the influence of 3 factors on this subject: (1) shear strength, (2) cavity size in concrete at point of attachment, and (3) correlation between small-scale and full-size specimens. K.S. Virdi and others. HRIS 25. IRRD 605375. (Citations) COMPLETE

16. a. (75) Dynamic Effects in Superstructures on Elastomeric Bearings. To determine how flexibility and damping characteristics of modern bearings affect dynamic response of superstructures subject to traffic loads. D.S. Mansell, J.R. Moody. HRIS 25. IRRD 605376. COMPLETE

(76) Modelling the Victorian Grain Transport System. To develop a simulation model which will be sensitive to capital investments in silos, elevators, rail and highway stock, and operational procedures. D.W. Bennett, M. J. Kent, H. P. Brown. HRIS 15. IRRD 605891. (Citations) ACTIVE

(77) The Influence of Geometric Design Standards on Rural Highway Economics. A study of the consequences of reduction of design standards for new construction as affected by types of terrain and different traffic conditions. D. W. Bennett. HRIS 21. IRRD 605890. ACTIVE

(78) Spatial Interaction Models of the Journey to Work. To examine the changes in work journey patterns over time for different occupation groups, using available census data. H. P. Brown. HRIS 55. IRRD 605889. ACTIVE

(79) Individual Choice Models of Recreational Travel Behavior. A comprehensive household survey of this behavior to develop individual choice models of activity and travel choices, to include destination and frequency choice models for single as well as for multi destination trips. H.P. Brown, A.S. Wisdom. HRIS 55. IRRD 605888. (Citations) ACTIVE

(80) Transport Policy Development. To investigate the process of transport policy formulation with a view to identifying the most fruitful directions for future research relevant to this area. D.W. Bennett. HRIS 11. IRRD 605887. ACTIVE

(81) Joint Automobile Ownership/Work Mode Choice Models. To investigate different forms of disaggregate behavioral models of the joint choice of household's levels of automobile ownership and mode of travel to work of the primary worker. D. W. Bennett, H.P. Brown. HRIS 55. IRRD 605886. ACTIVE

New Projects

(83) The Influence of Geometric Design Standards on Rural Road Accidents. To investigate the influence of the levels and variations of geometric design standards on the occurrence of accidents on rural roads. D. Bennett, W. Mandrawa. HRIS 51. IRRD 606601. ACTIVE

(84) Testing of Standard Connections (Pilot Programme Series 3). To test web side plate connections and flexible end plate connections to enable revision of the safe load tables. D. Mansell. HRIS 25. IRRD 606924. ACTIVE

b. Department of Mechanical Engineering: Same address.

(1) Driver Behavior on Curves. To investigate ways of improving this interaction by improvements to each component. P.N. Joubert and others. HRIS 52. IRRD 605780. (Citations) COMPLETE

(9) The Design of Numerals. To improve the legibility of sign numerals under varying illumination levels. P.R. Hind, E.R. Hoffmann. HRIS 54. COMPLETE

(12) Driving Task Demand. Laboratory investigation of the relationship between task demand, secondary task performance and level of physiological activity. W.A. Macdonald, F. Bryant, E.R. Hoffmann. HRIS 52. IRRD 605793. (Citations) COMPLETE

(14) Perception of Relative Velocity. To develop an inter-communication system to assist drivers in making valid judgments in overtaking and passing situations. HRIS 52. COMPLETE

16. b. (16) Traffic Signs and Poor Readers. To determine whether dyslexics, migrants and low I.Q. groups have difficulty with present verbal and symbolic traffic signs. E.R. Hoffmann, J. McCarthy. HRIS 52. (Citations) COMPLETE

(24) Study of Impacts with Utility Poles. Examining available information on collisions with utility poles and identifying problem areas and possible corrective measures. P. N. Joubert, J. Fox, M. C. Good. HRIS 51. COMPLETE

(25) Impact Attenuation Solutions for Timber Utility Poles. To assess possibility of technically feasible methods to weaken utility poles to reduce severity of accidents involving them, using scale models and full-scale testing. P.N. Joubert and others. HRIS 25. IRRD 605377. (Citations) COMPLETE

(26) Effects of Traffic Patterns on Fuel Consumption. To develop a chassis dynamometer to measure consumption emission parameters for simulated traffic patterns. H.C. Watson and others. HRIS 53. IRRD 605878. (Citations) ACTIVE

New Projects

(27) Signing Systems for NAASRA. To investigate and develop solutions to signing problems, as requested by NAASRA for use in revising SSS code AS 1742 - Manual of Uniform Traffic Control Devices. E. Hoffmann, A. Meerman, W. MacDonald. HRIS 54. IRRD 606636. ACTIVE

(28) Motorcycle Rider Skill Assessment. To measure rider skill in performance of safety related tasks, identify skilled and unskilled patterns of performance and determine effect of motorcycle size on outcome of skill tests. H. Prem, M. Good. HRIS 52. IRRD 606637. ACTIVE

(29) Braking, Stability and Handling of Motorcycles. To review current problems in braking, stability and handling of motorcycles and to establish priorities for research in Australia. R. Juniper, M. Good. HRIS 53. IRRD 606638. ACTIVE

(30) Quantifying Motor Vehicle Fuel Conservation Strategies. To provide vehicle related data by which fuel usage may be calculated on a disaggregated basis, e.g., link by link, and then integrated to obtain usage for large regions. H. Watson, E. Milkins, M. Preston, P. Beardsley. HRIS 17. IRRD 606639. ACTIVE

(31) Application of the PKE Variable to Emission and Fuel Usage of Traffic. To correlate PKE with traffic flow data such as density, halts, delays, lanes, etc., as a predictive procedure for signal timing optimization. H. Watson, J. Skazas. HRIS 17. IRRD 606640. ACTIVE

(32) Short Range Delineation. To determine an optimal delineation system by development of a control model of the driver-vehicle-road system using concept of visual observation noise introduced by degraded visual field information. M. Good. HRIS 52. IRRD 606685. (Citations) ACTIVE

c. The Victorian College of Optometry: 374 Cardigan Street, Carlton, Victoria 3053.

(9) Conspicuousness of Objects. To study means of specifying conspicuousness of objects and road signs. B.L. Cole, S.E. Jenkins. HRIS 54. COMPLETE

(13) Traffic Sign Formats. Develop a comprehensive model for predicting effectiveness of complex visual displays from visual performance characteristics. R. J. Jacobs, B.L. Cole. HRIS 54. (Citations) COMPLETE

(15) Judgement of Distance at Night. To determine the principal visual cues that contribute to the judgement of distances on unlit highways at night and to establish the relative importance of these cues. B. L. Cole, K.J. Bowman, J.F.M. Bryant. HRIS 52. IRRD 605877. ACTIVE

16. d. Faculty of Economics and Commerce: Same address.

(3) Principles to Guide Road User Charges - Economic Issues. P.A. Xavier. HRIS 15. COMPLETE

(4) Effects of Regulation in the Road Freight Transport Industry. To identify some of the effects of differential regulation of intra-state and interstate road haulage in Australia, with particular reference to freight transport in Victoria. I.R. Ker. HRIS 11. COMPLETE

f. Department of Criminology: Same address.

(2) Driver Response to the Change from Green to Amber at Signalized Cross Intersections. Examination of factors determining through driver's response to the change from green to amber in presence of vehicles waiting to make a right turn across his path. A. Lovegrove. HRIS 52. IRRD 606614. INACTIVE

New Project

(3) Danger Compensation Effects of Stop Signs at Intersections. To investigate whether environmental controls increase road safety since drivers adjust their behavior elsewhere to compensate for the safety improvements. A. Lovegrove, R. Smith. HRIS 52. IRRD 606615. (Citations) ACTIVE

g. Center for Environmental Studies: Same address.

(1) Social Impact of Transport Related Changes. To describe an urban area in terms of likely short-term and long-term behavioral responses to changes in constraints from transport and related changes, and establish thereby a framework for assessing social impact from such changes. R.J. King. HRIS 15. COMPLETE

(2) Social Evaluation of the Port of Melbourne Forward Development Plan. To explore social and community effects of proposed development and alternative strategies for consequent land transport. R. J. King. HRIS 12. COMPLETE

(4) Social Impact of Transport-Related Changes. To explore social differentiation in an urban area, examine accessibility to services, observe behavioral responses to levels of constraints, and describe urban areas in terms of behavioral responses to changes in transport. R.J. King. HRIS 15. IRRD 605379. (Citations) COMPLETE

(5) Application of Social Impact Assessment. To develop guidelines for the practical application of means of assessing short and long term social impacts of highway projects. R. King, J. Morris. HRIS 15. IRRD 605876. ACTIVE

17. UNIVERSITY OF QUEENSLAND: St. Lucia, Queensland 4067

a. Department of Civil Engineering: Same address.

(7) Specific Energy Design. Development of a new design technique for hydraulic structures based on the use of minimum energy principles. G.R. McKay. HRIS 22. COMPLETE

(9) Pavement Drainage. To handle a design storm of 6 in. per hour. G.R. McKay. HRIS 22. COMPLETE

(14) Capacity of Slender Reinforced Concrete Columns. To develop a theory and obtain experimental data on deflection and creep characteristics. J. Behan. HRIS 25. COMPLETE

17. a. (20) Shear Connectors for Precast Composite Construction. To develop construction techniques and design criteria for types of shear connectors under investigation. A. V. Koretsky. HRIS 25. IRRD 606677. ACTIVE

(21) Behavior of Fly Ash Blended Cements and Concretes. To examine various aspects of the behavior of cement and concretes with variable fly ash content. A. V. Koretsky. HRIS 32. (Citations) INACTIVE

(30) Assessment of Community Response to Road Traffic Noise. A two stage study involving freeways and surface arterials, including a large scale social survey and physical noise measurements. A.L. Brown. HRIS 17. (Citations) COMPLETE

(31) Modeling Land Use Activity and Urban Spatial Structure. The study involves an extensive literature review and a modeling approach to explain relationships between land use activity and urban spatial structure. T.J. Grigg. HRIS 15. COMPLETE

(33) Dynamic Signs for the Optimum Assignment of Freeway Traffic in Congested Conditions. To develop access control procedures for a freeway. R. L. Pretty, A.M. Harrison. HRIS 54. IRRD 606678. ACTIVE

(34) Creep and Shrinkage of High Strength Concrete. Evaluation of actual losses of prestress due to creep and shrinkage for most common forms of prestressed concrete components used in Queensland. A.V. Koretsky, P. Rotolone. HRIS 32. (Citations) COMPLETE

(35) Evaluation of Road Traffic Noise Predictive Methods. Using noise level data from a previous study of traffic noise from several sites in Brisbane, Melbourne, and Sydney, to test existing methods for noise prediction in Australian conditions. A.L. Brown. HRIS 17. IRRD 605380. COMPLETE

(36) Vehicle-Highway Bridge Interaction. Determine the suspension characteristics for both axles of a vehicle and then develop an analytical model to describe the behavior of the vehicle crossing a bridge with bumpiness. The predictions will be compared with actual field measurements. C. A. O'Connor, P. Swannell, K. Kunjambo. HRIS 53. IRRD 605823. ACTIVE

(37) Highway Bridge Live Load Spectra. To improve the specifications of bridge live loads by obtaining spectra for the total live load bending moment at midspan of a simply supported bridge in service. C.A. O'Connor, M. G. Lay, R. Pritchard. HRIS 25. IRRD 605822. (Citations) ACTIVE

(38) Design of Long Span Prestressed Concrete Girder Bridge with Deck at Lower Flange. An investigation of the feasibility of such a bridge, including cost estimates. C.A. O'Connor, J.A. Hart. HRIS 25. IRRD 605821. ACTIVE

New Projects

(39) Hydraulics of Open Channel Expansions and Contractions for Critical Flow Conditions. To determine the characteristics of expanding and contracting free furface flows at Froude numbers equal to and slightly less than unity and to define the limits of the rates of expansion which can be negotiated by such flows without incurring large energy losses. C. Apelt. HRIS 22. IRRD 606679. ACTIVE

(40) Ultimate Load Analysis of Bridges. To calculate ultimate capacity of girder bridge structures. L. Meek, G. Brameld. HRIS 25. IRRD 606680. ACTIVE

(41) Time Dependent Behaviour of Prestressing Tendons. To examine and summarize the techniques of measuring relaxation losses in prestressing strands and in relaxation values recommended by international standards and design codes. A. Koretsky. HRIS 25. IRRD 606681. (Citations) ACTIVE

17. b. Department of Mechanical Engineering: Same address.

(3) Lateral Stability of Wheeled Tractors. A remotely-controlled tractor is employed to develop and validate a mathematical model. F. Grigg. HRIS 53. COMPLETE

(4) Energy Storage - Optimal Automobile Transmissions. Computer simulation of both hybrid and control devices to produce more efficient method of utilizing energy for propulsion while maintaining equivalent performance on present day vehicles. K.J. Bullock, P.V. Bandopadhayay, B.C. Daniels. HRIS 53. ACTIVE

(5) Steam Propulsion for Automobiles. Develop new steam cycle engines to provide super performance for automobiles. K. J. Bullock, P. V. Bandopadhayay. HRIS 53. ACTIVE

(6) Hybrid Transmission and Energy Storage for Diesel-Powered Underground Front-End Loaders. To make computer simulation for feasibility analysis of hybrid using energy storage to meet peak power demands with minimum heat to the environment. K. J. Bullock and others. HRIS 41. IRRD 605381. COMPLETE

c. Department of Economics: Same address.

(5) Road Expenditure Policy in Australia. To examine the theoretical background in depth; to examine objectives of road supply authorities; to test actual expenditure patterns against stated objectives. G. Docwra. HRIS 14. ACTIVE

(6) Regulation on Australia. To examine the impact of direct regulation at the industry level on the allocation of resources, with a significant part of the study concerned with road transport regulation and effects on road use. H.M. Kolsen. HRIS 11. ACTIVE

18. MONASH UNIVERSITY: Wellington Road, Clayton, Victoria 3168.

b. Department of Civil Engineering: Same address.

(1) Geotechnical Properties of Yarra Delta Alluvial Deposits. To determine the properties and behavior of a highly compressible black silty clay. I. B. Donald, R.M. Cullen, A.K. Parkin. HRIS 61. ACTIVE

(9) Transport Implications of Different Forms of Growth of Melbourne. An investigation of the effect on trip lengths of different forms of growth and different levels of service on the transport network. K.W. Ogden. HRIS 13. COMPLETE

(15) Analysis of Cone Penetrometer Tests. To design, build and use a large specimen calibrating chamber for studying the correct interpretation of various tests in sand. I. B. Donald, G. A. Chapman. HRIS 62. ACTIVE

(19) Traffic Aspects of Town Planning. Study of the interaction of town planning and traffic engineering, car parking, street layout and other developments relating to land use. K.W. Ogden, M.A.P. Taylor. HRIS 12. COMPLETE

(20) Traffic Management Studies. Investigation of the effectiveness of traffic control devices as related to the site and road system as a whole. K. W. Ogden, A.J. Richardson. HRIS 54. COMPLETE

(21) Routing of Automatically Controlled Vehicles. Examination of existing algorithms for route control on transport network, and development of new algorithms for automatically controlled vehicles. F.J.P. McGinley, M.A.P. Taylor, K.W. Ogden. HRIS 54. COMPLETE

18. b. (22) Models for Transport Network Analysis for Teaching Methods. Development of models with simulate traffic loadings on parts of a transport network. K. W. Ogden, M.A.P. Taylor. HRIS 12. ACTIVE

(23) Steel Box Girders. Investigate stress distribution and post-buckling strength of longitudinally stiffened steel plates in box girders. N. W. Murray. HRIS 25. ACTIVE

(24) Disaggregate Behavioral Modal Choice Model. Development of a mode choice model suitable for use in predicting switches to car-pools, transit lane buses, etc., as result of incentives given to these modes. A. J. Richardson. HRIS 12. (Citations) COMPLETE

(26) Car-Pooling for the Journey to Work. Feasibility, potential and effects of car-pooling for the journey to work, and the institutional constraints and implementation methods being studied. A. J. Richardson. HRIS 16. IRRD 606960. (Citations) ACTIVE

(28) Transport Investment and Residential Location Choice. Formulation of economic utility theory to explain choice processes in residential area selection, including transport and public utility investment variables. W. Young, A.J. Richardson. HRIS 15. IRRD 605784. (Citations) ACTIVE

(29) Evaluation of Rural Road Overtaking Lane Performance. Evaluate effects of intermittent passing lanes on rural highways, with respect to capacity, delay and flow characteristics. C. Hoban, K.W. Ogden. HRIS 55. IRRD 606959. ACTIVE

(31) Daily Travel Time Variations. Statistical investigation of daily travel time variations experienced on selected Melbourne traffic routes. A. J. Richardson, M.A.P. Taylor. HRIS 55. COMPLETE

(33) Intersection Conflict Analysis. Theoretical investigation of conflict levels at various types of intersections, and to compare exposure, conflict levels, and accident numbers. G. Hodge, A.J. Richardson. HRIS 54. COMPLETE

(35) Consolidation of Soils by Electro-Osmosis. To study the effects of electro-osmosis on soils, as it pertains to techniques for extracting water from a soft, initially non-trafficable cohesive soil so as to render it usable. I. W. Johnston. HRIS 62. (Citations) INACTIVE

(36) Design of Large Diameter Socketed Piles in Soft Rock. To investigate failure mechanics in large diameter rock socketed piles, using reduced scale as well as full-scale instrumented piles. I. B. Donald, I. W. Johnston, A. F. Williams, S.W. Sloan. HRIS 62. (Citations) ACTIVE

(37) Stability of Embankments of Soft Clay. To investigate properties of alluvial deposits relevant to analysis of embankment stability and deformation. C.T. Toh, I. B. Donald. HRIS 62. INACTIVE

(39) P.R.T. Intersection Control Algorithms. Examination of existing algorithms for intersection control and development, and testing of new algorithms. F. J. McGinley, K.W. Ogden, A. J. Richardson. HRIS 54. (Citations) COMPLETE

(40) Airport Ground Traffic Model. Development and testing of a model to predict ground traffic from airline schedule information. J.P. Apelbaum, A. J. Richardson. HRIS 55. (Citations) COMPLETE

(43) High Occupancy Vehicle Priority Lane Warrants. Develop a series of warrants for the installation of a number of different bus lane configurations. S. G. Ritchie, A. J. Richardson. HRIS 54. IRRD 606961. COMPLETE

18. b. (44) A Study of Travel Linkages. Using Canberra data, to examine relationships between journeys to and from work. N. R. Graham, K.W. Ogden. HRIS 55. IRRD 605382. (Citations) COMPLETE

(45) Administration of Transport Systems Management Schemes. To review existing administrative structures (compared with U.S. TSM) and identify changes needed to provide for integrated short-term urban transport systems management (TSM). P.S. Sani, K.W. Ogden. HRIS 11. IRRD 605383. ACTIVE

(46) International Comparisons of Urban Freight Characteristics. To compare characteristics of urban freight demand and supply for Melbourne, Chicago, London, and Calgary. T. H. Soh, K. W. Ogden. HRIS 13. IRRD 605384. COMPLETE

(47) Analysis and Appraisal of Freight Generation Characteristics. To investigate the structural linkages between freight generating activities in terms of freight flows between them and the factors influencing the location of freight activity centers. K. W. Ogden and others. HRIS 11. IRRD 605783. (Citations) ACTIVE

(48) Car Pooling and Geographic Structure. To identify and measure the socio-economic and travel characteristics of persons who are currently forming car pool arrangements. A. Richardson, W. Young. HRIS 16. IRRD 605797. (Citations) ACTIVE

(49) Structural Economic Change and Urban Transport. To examine those aspects of urban person and freight transport which are likely to be sensitive to structural change. K. W. Ogden. HRIS 15. IRRD 605864. (Citations) ACTIVE

New Project

(50) Signalized Intersection Survey Method. To validate a theoretical survey method against field data, including a filmed record of intersection performance. A. Richardson, S. Samuels. HRIS 54. IRRD 606686. ACTIVE

d. Department of Mechanical Engineering: Same address.

(2) Noise Source Identification on Automotive Engines by Measurement of Near Field Intensity. Application of an intensity meter to an automotive engine to identify significant areas of sound radiation. R. J. Alfredson. HRIS 53. INACTIVE

e. Department of Psychology: Same address.

(3) Study of Human Element in Road Accidents. Examining specific types of accident-related road user behavior, and identifying those related to characteristics of the individual and those related to the vehicle and traffic system. T. J. Triggs, R. K. McKelvey. HRIS 52. ACTIVE

(4) Feasibility of Modifying Driver Error Through T.V. Films. Investigating the feasibility of scientifically evaluating this publicity approach in Australia since it has shown promise in the United States. D.M. Thomson. HRIS 52. ACTIVE

(5) Effect of Speed Feedback in Driver Behavior. Evaluate the effect of providing driver with audible signal when speed exceeds safe level. T.J. Triggs. HRIS 52. ACTIVE

(7) Unalerted Driver Response Times on Rural Roads. Evaluation of driver response times in real world road situations. R. W. Cumming, T. J. Tripps. HRIS 52. ACTIVE

18. e. (8) Delineating the Way Ahead at Night. To study delineation on rural roads at night to assess driver "path-keeping" needs and to compare present night-time cues in the laboratory. R.W. Cumming. HRIS 54. IRRD 605385. (Citations) COMPLETE

(9) Safe Road Crossing Gap Recognition Training Procedure for Primary School Children. To determine, as a function of age, the child's ability to discriminate safe from unsafe gaps between vehicles approaching at characteristic speeds in their environment, using motion picture films of traffic streams. R. K. McKelvey, P. Mikes. HRIS 51. IRRD 605386. COMPLETE

(10) Driver Response Times on Rural Roads. To obtain response time data for drivers confronted by unexpected events or emergencies and compare with overseas experience, so as to verify the latter's applicability to Australia. T.J. Triggs, W. Harris. HRIS 52. IRRD 605387. ACTIVE

New Project

(11) Long Range Delineation at Night. To continue investigation of the most appropriate ways of providing long range delineation of rural roads at night and for evaluation systems. T. Triggs. HRIS 52. IRRD 606916. ACTIVE

f. Department of Materials Engineering: Same address.

(1) Effects of Surface Peening on the Fatigue Behavior of Longitudinal Aluminum Alloy Fillet Welds. To determine whether beneficial effects of peening observed on transverse alloy filler welds are repeated on the longitudinal welds. I. J. Polmear. HRIS 34. (Citations) COMPLETE

g. Faculty of Law: Same address.

(1) Legal Implications of Frangible Poles. To clarify the liability of the pole owner if the pole is not the safest equipment available and is involved in an accident. J. Epstein, L. Hunter. HRIS 70. IRRD 605872. (Citations) ACTIVE

20. HOBART CITY COUNCIL: P. O. Box 503E, G.P.O. Hobart, Tasmania

(2) Incidence of Traffic Accidents in Relation to Roadside Poles. To determine the better location of roadside hazards and examine important of street lighting intensity in relation to accidents. D. Rawlings. HRIS 51. COMPLETE

(3) Evaluation of Runoff in an Urban Area. To verify the TRRL method of design of storm-water pipeline for use in Australian conditions. G. Cruise. HRIS 22. COMPLETE

21. AUSTRALIAN DEPARTMENT OF HOUSING AND CONSTRUCTION: Sirius Building, Furzer Street, 2606 Philip ACT

a. Central Office: 470 Northbourne Avenue, Dickson Act, 2602

(5) Performance of Open Graded Bituminous Mixes on Airfield Runways. To evaluate the effectiveness, life and cost of open graded mixes as anti-skid surfaces. R. Monteith, G. F. Haack. HRIS 24. COMPLETE

(6) Stripping of Bitumen/Aggregate Mixtures. To determine the causes of, and relative susceptibility of, aggregates to stripping in presence of water. E.C. Brown, D. Dyson, G.F. Haack, R. Monteith. HRIS 35. INACTIVE

(11) Computer Program for Subdivision Roads. Development of a computer program for the design and documentation of roads for housing subdivision. J. Cleeland, D. Jones. HRIS 21. COMPLETE

21. a. (12) Unsealed Longitudinal Joints in Concrete Airfield Pavements. To assess performance of these joints. R. Elliott, R. Bairstow. HRIS 24. ACTIVE

(14) Size of Concrete Slabs in Airfield Pavements. Comparison of unreinforced slabs 7.6m x 9. 1m with 7.5m square slabs. G.F. Haack, R.N. Gurevitch. HRIS 24. COMPLETE

(15) Hardening of Bitumen Binders in Airfield Pavements. Assess changes in properties of bitumen binders in drum and pugmill mixed bituminous concrete, as well as sprayed surface treatments. G.F. Haack, R. M. Monteith, D. Dyson. HRIS 31. ACTIVE

(16) Computer Program for Slip Circle Analysis. Develop a computer program for analysis of the stability against slipping of dams, embankments and cuttings. D. Buultjens. HRIS 62. COMPLETE

(17) Computer Graphics Software System. Develop applications, simplify production, and provide facilities for user control and selective interpretations. R. Walton. HRIS 21. INACTIVE

(18) Pavement Performance. To assist in an investigation of pavement performance and distress in Canberra. M. Martin, L. Teo. HRIS 24. IRRD 605830. ACTIVE

22. COMMONWEALTH BUREAU OF ROADS: 60 Collins Street, Melbourne, Victoria 3000

(25) Analaysis of Consumer Preference in Choice of Travel Mode. Attribute-based models of choice are being developed for work and shopping trips. D. Hensher, J. Stanley. HRIS 13. COMPLETE

(34) An Inter-Industry Model of Roads and Road Transport. To measure the demand for resources required to meet specified levels of road investment,other transport objectives and to assess the implications of alternative national road investment policies. T. Hogg, R.H. Burke, B.D. Haig. HRIS 15. COMPLETE

(47) Urban Residential Street Study. Investigations of drainage and pavement design, block size, finance etc. and the relation between physical environmental and social interaction. J. Holton, W. Pattison, C. Puttaswamy, N. Rockcliffe, J. Helmer. HRIS 21. COMPLETE

23. DEPARTMENT OF MAIN ROADS: TASMANIA: Box 936J, G.P.O. Hobart, Tasmania 7001

(4) Use of the "Texas Triaxial" Test for Road Gravels. To determine the strength parameters of Tasmanian road-making gravels with this test and correlate the results with field performance. R.A. Rallings, R.B. Bender. HRIS 35. IRRD 606925. INACTIVE

(7) Behavioral Travel Demand Modeling. Investigate alternative specifications of models for use in policy analysis and alternative forms of variables such as perceived costs, estimated costs and activity location variables to reflect factors influencing share passenger modes. (With ARRB) J. Lock, D. Bowyer. HRIS 12. COMPLETE

24. STATE HEALTH LABORATORY: 63-79 George Street, Brisbane, Queensland

(6) Alcohol and Drugs: A Survey of Traffic Crash Fatalities. A study of the incidence of alcohol and drugs in traffic crash fatalities in Brisbane. J.I. Tonge and others. HRIS 52. COMPLETE

24. (7) Injury Patterns and Medical Factors in Traffic Crash Fatalities (1973-78). A continuing study of injury patterns in Brisbane, noting changes in the various participant groups, such as drivers, pedestrians, cyclists, alcohol levels, ejections and effect of restraint systems being examined. J.I. Tonge, I.S. Wilkey. HRIS 51. IRRD 605828. ACTIVE

New Project

(8) Role of Prescription Drugs in Traffic Accidents. A study of 200 consecutive traffic crash fatalities in Brisbane to determine effect of prescription drugs in traffic crash causation. A. Ansford, D. Lecky. HRIS 52. IRRD 606942. ACTIVE

25. MINISTRY OF TRANSPORT - VICTORIA: 570 Bourke Street, Melbourne, Victoria 3000

(12) Car Ownership Forecasts. To obtain realistic car ownership forecasts, using the Australian census and other available data. Staff. HRIS 13. INACTIVE

(13) Australian Census and Transport Planning. To establish a relationship between census data and various MTC home interview and transport studies, particularly parking, ownership and work journeys, so as to use regular census as a possible source of transport data. Staff. HRIS 12. ACTIVE

(16) City of Berwick Transport Study. To assess the need for reservation of transport corridors for future transport systems, such as dial-a-bus. HRIS 16. COMPLETE

(21) Level Crossing Safety or Warning Devices. To improve the effectiveness of warning devices at rail-road level crossings and reduce incidence of crossing accidents. HRIS 54. ACTIVE

(22) Wangaratta Traffic Study. To evaluate existing traffic system and alternative improvements leading, with public involvement, to recommendations for improvements and future development. HRIS 54. ACTIVE

(23) Effects of Heavy Vehicles on Residential Streets. Identify the environmental problems of heavy vehicles on residential streets. HRIS 17. COMPLETE

(24) Transport Needs of the Young, Old and Handicapped. To define the problems of those sections of the community that are disadvantaged in access to transport services and identify solutions with specific investigation of a demand-responsive local transport system. HRIS 16. COMPLETE

(25) Modal Interchanges - Monitoring Effects on Travel Patterns. To establish the magnitudes of the effects construction of a large change of mode parking facilities have on such things as peak mode split, submode split to railway service and diversion of patronage from nearby railway stations. HRIS 12. ACTIVE

(26) Public Transport Needs of Area 17 (Inner Southern) Region. Assessment of the public transport needs [illegible] the area and an evaluation of the deficiencies of the current transport system in fulfilling those needs. HRIS 16. ACTIVE

(27) Home Interview - Metropolitan Transport Region. To obtain travel data in conjunction with the 1975 population census for analysis of travel characteristics and for use in travel forecasting models. HRIS 12. ACTIVE

(28) Staggered Hours. An assessment of reducing traffic congestion and crowding in public transport by changes in working hours. HRIS 55. ACTIVE

25. (29) Minibus Services to Transport Deprived Groups. Examine such uses for minibuses. HRIS 11. ACTIVE

(30) Dial-a-Bus Experimental Service. To measure level of demand, factors influencing demand, likely success of demand-responsive service, and operating costs of experimental dial-a-bus service in 2 Melbourne suburbs. B. Mainka, G. Hanson. HRIS 13. IRRD 605388. (Citations) COMPLETE

26. JAMES COOK UNIVERSITY OF NORTH QUEENSLAND: Fulham Rd., 4810, Townsville, Queensland

(3) Pavements in the Wet Tropics. An integrated study of the effect of climate, materials and cross section on pavement performance in tropical regions, K.B. Wallace, F. Leonardi. HRIS 24. COMPLETE

(5) Pavement Cross Section Experiment: Cairns. To monitor performance of rural road test sections in Cairns, North Queensland, to evaluate relative merits of alternative pavement cross-sections and subdrainage. K. B. Wallace. HRIS 24. IRRD 605389. ACTIVE

28. DEPARTMENT OF MOTOR TRANSPORT, NEW SOUTH WALES: 56 Rothschild Avenue, Roseberry, Sydney, New South Wales 2018

(a) Traffic accident Research Unit: 56 Rothschild Avenue, 2018, Rosebery, New South Wales.

(7) Driver Licensing: A Review of Procedures. To review all defects of driver licensing and recommend changes in system. D. Linklater, D. Saffron, P. Berger. HRIS 51. IRRD 605935. ACTIVE

(37) School Bus Safety. Determine characteristics of school bus problems by examining involvement of buses in traffic accidents, particularly where children emerge from behind a stopped bus. P. G. Croft. HRIS 51. COMPLETE

(38) Study of Long Distance Heavy Vehicle Drivers. Determine the special problems of truck driving in terms of training and outlook of drivers and physical characteristics of vehicles and the traffic system. D. Linklater. HRIS 52. IRRD 605936. (Citations) COMPLETE

(39) Child Restraint Usage and Attitudes. Survey of reported usage and attitudes among mothers and children under age of eight. K. Freedman. HRIS 53. IRRD 605937. (Citations) COMPLETE

(41) Motorcycle Helmet Evaluation. In terms of protection offered the user in absorbing kinetic energy, resistance to penetration and strength of retention system. D. C. Herbert, N. Gillies. HRIS 53. IRRD 605938. (Citations) ACTIVE

(42) De-Lethalization of Truck Trays. Examine concepts of low cost de-lethalization of truck trays for pedestrians, pedal cyclists and motorists. D. C. Herbert, D. Simons, HRIS 51. COMPLETE

(43) Passenger Car Seats in Frontal Crashes. Identify crash performance requirements of seats and their attachment to the vehicle, including inertial loading, impact by unrestrained rear seat passengers and luggage, and belt wearers. R. Garth, D. C. Herbert. HRIS 53. COMPLETE

(44) Heavy Vehicle In-depth On-Scene Studies. To ascertain factors leading to involvement of heavy vehicles in serious crashes and examine losses arising. D. C. Herbert, M. Humphreys, C. Corben. HRIS 51. IRRD 605939. (Citations) COMPLETE

AUSTRALIA (contd)

28. a. (45) Integrated Injury and Traffic Crash Data System. Design and develop injury crash recording system for integration of hospital data and traffic crash data. B.A. Vasey. HRIS 51. COMPLETE

(57) Pedestrian Risk at Crossings. Define the extent and characteristics of the pedestrian accident problem and determine role of advance warning devices in lessening risks. P.G. Croft, P. Van Den Bos. HRIS 51. IRRD 605940. (Citations) COMPLETE

(58) Motor or Pedal Cycle In-depth on Scene Crash Studies. Ascertain the factors leading to injury of riders of motorcycles and pedal cycles. D. C. Herbert, M. Humphreys, C. Corben. HRIS 51. IRRD 605941. COMPLETE

(60) Pedestrian In-depth on Scene Studies Crash. Ascertain the factors leading to pedestrian injury. D.C. Herbert, M. Humphreys, C. Corben. HRIS 51. IRRD 605942. (Citations) COMPLETE

New Projects

(61) Communicating Road Safety to the Young Pedestrian: An Exploratory Research Programme. Recommendations as to types of changes to be incorporated into future traffic safety education programs directed at the young pedestrian. J. Schreiber, J. Lukin. HRIS 52. IRRD 605943. (Citations) COMPLETE

(62) Communicating Road Safety to the Young Pedestrian: Evaluation of Road Safety Resource Material for Infants' Schools. Recommendation made that further teacher training be given so that maximum pupil benefit will be obtained from the road safety material. J. Schreiber, C. Berry. HRIS 52. IRRD 605944. (Citations) COMPLETE

(63) Helmet Performance in Fatal Motorcycle Crashes. Severity of helmet damage showed some positive association with death from head injury. S. Johnstone, M. Veysey. HRIS 52. IRRD 605945. (Citations) ACTIVE

(64) Vehicle Occupant Restraint Usage. Continuous monitoring of seat belt wearing and child restraint usage within urban and rural areas. J. Norrish. HRIS 53. IRRD 605946. (Citations) ACTIVE

(65) Motorcyclist Observational Surveys. To monitor the use of motorcycle equipment and protective apparel worn by motorcycle riders. J. Norrish. HRIS 53. IRRD 605947. ACTIVE

(66) Traffic Speeds in Rural and Urban Areas. To collect and evaluate data by measurement of traffic stream free speeds and the classification of vehicles that comprise the streams. P.G. Croft, J. Jamieson, J. Cleary. HRIS 55. IRRD 605948. ACTIVE

(67) Interior Padding of Cars for Occupant Protection. Study examines all ways to increase interior safety of automobiles. D.C. Herbert, R. Garth, R. M. Arthurson. HRIS 53. IRRD 605949. ACTIVE

(68) An Education Campaign Directed at Pedestrians Aged 50 Years and Older. Report indicates that road crossing behavior of those aged 50 years and older not amendable to change by use of multi-media campaigns. Dr. Linklater, Bl Lind. HRIS 52. IRRD 605950. (Citations) COMPLETE

(69) Motorcycle Headlamp Usage. A study of daytime usage of motorcycle headlamps. P.G. Croft, J. Cleary, J. Pettigrew. HRIS 53. IRRD 605951. (Citations) COMPLETE

28. a. (70) Drink Driving Education in Secondary Schools. To develop and evaluate drink driving education materials for the first four years of secondary schools (12 to 16 years old). T. J. Keighley, J. Rothman. HRIS 52. IRRD 605952. ACTIVE

(71) Motorcyclist Injury Mechanisms From In-Depth Crash Studies. Crash variables have been complied and correlated. M. J. Griffiths. HRIS 51. IRRD 605953. ACTIVE

(72) Traffic Engineering Aspects of the Fairfield in-Depth Crash Program. An analysis from a traffic engineering viewpoint was applied to 243 on-scene in-depth crash case studies. J. Jamieson. HRIS 51. IRRD 605954. (Citations) COMPLETE

(73) Social and Psychological Costs of Road Traffic Crashes. A literary review search to reveal the emotional or psychological after-effects often encountered by individuals who have gone thru road crashes. D. Hart. HRIS 52. IRRD 605955. Project Status in Abeyance.

(74) Public Transport Commission Bus Crash Data. V. Lukin, V. Dendtler. HRIS 53. IRRD 605956. (Citations) COMPLETE

(75) Education Campaign: Child Restraints. A mass media campaign conducted to increase the use of child restraints and seat belts for children. K. Freedman, C. Berry. HRIS 53. IRRD 605957. ACTIVE

(76) Adult Education Campaign About The Young Pedestrian. Campaign to inform adults of the vulnerability of young children in the traffic environment. J. Rothman, C. Berry. HRIS 51. IRRD 605958. ACTIVE

(77) Laboratory Performance of Child Restraints. Review of the ability of child car safety seats to meet or surpass the requirements of Australian standard 1754-1975. D.C. Herbert, C. Davis. HRIS 53. IRRD 605959. ACTIVE

(78) Road Fuel Tanker Collisions Study. Research was concerned with the safety of crash victims and the public. C. Corben, M. Griffiths, Dr. Linklater. HRIS 53. IRRD 605960. ACTIVE

(79) Comparison of Police Reported with In-Depth Crash Data. To review the quality of reporting and recording of police reported crash data for a more efficient use of the mass data system. B. Lind, H. Goldsmith, I. Kearns. HRIS 51. IRRD 650961. ACTIVE

(80) Exposure of Road User to Crash Risk. An examination of the present methods of collecting exposure data will be made with the intent to review the models in use. B. Lind. HRIS 51. IRRD 605962. Status in Abeyance.

(81) Crash Location Recording System. System is being developed to achieve compatability with a nation wide mapping system and with state road authorities. J. Jamieson, H. Goldsmith, P.G. Croft. HRIS 51. IRRD 605963. ACTIVE

(82) Hazardous Accident Locations. Purpose is the identification and analysis of hazardous accident locations using mass accident data records. H. Goldsmith, A. Richmond. HRIS 51. IRRD 605964. ACTIVE

(83) Human Factors Tests for S.A.A. Tests of Child Restraints. To investigate the security and quick release functions of child restraint buckles as the first stage of a wider investigation of the behavioral variables in child restraint use. K. Freedman, C. Berry. HRIS 52. IRRD 605965. ACTIVE

28. a. (84) Seat Failures in Rear Impacts. A study to determine the impact severity and relative frequency of modes of failure due to rear impacts. R. Garth, D. C. Herbert. HRIS 53. IRRD 605966. ACTIVE

(85) Urban Pedestrian Crashes. To examine the distribution and nature of pedestrian crashes within the urban street network of Sydney. J. Jamieson, J. Cleary. HRIS 51. IRRD 605967. ACTIVE

(86) Time Series Analysis of Mass Crash Data. To fit mathematical models to crash data in order to analyse trends and to detect significant departures from such trends. J. Lukin. HRIS 53. IRRD 605968. ACTIVE

b. Chief Engineer's Branch: Same address.

New Projects

(1) Disabled Driver Survey. To develop a driving simulator to enable the physical capabilities of disabled applicants for motor vehicle licenses to be objectively measured. O. Johnstone. HRIS 52. IRRD 605916. ACTIVE

(2) Vehicle Inspection Technology. To improve the quality and efficiency of inspection services. O. Johnstone. HRIS 53. IRRD 605917. ACTIVE

29. UNIVERSITY OF NEWCASTLE: Rankin Drive, 2308 Shortland, New South Wales.

a. Department of Civil Engineering: Same address.

(2) Blast Furnance Slag for Road Bases. Cyclic triaxial tests on various gradings of slag to obtain resilient modulus and Poisson's ratio, for use in pavement design. B.S. Heaton, F. Bullen. HRIS 34. (Citations) IRRD 606602. COMPLETE

(3) Rational Road Pavement Design with Marginal Materials. A study of marginal materials and what is required to make them useable in highway construction including an economic analysis. B.S. Heaton. HRIS 24. IRRD 605862. (Citations) ACTIVE

New Project

(4) Mechanism of Seasonal Variation in Skid Resistance. To examine the changes in polished stone microtexture caused by abrasion, polishing and weathering and to relate the changes to seasonal variations in skid resistance. B. Heaton. HRIS 24. IRRD 606603. (Citations) ACTIVE

b. Department of Mechanical Engineering: Same address.

(1) Vehicular Traffic Noise Models. To provide mathematical models that will predict vehicular traffic noise indices for a given set of parameters, such as type and mix of vehicles, traffic volumes, traffic lanes, intersections, etc. E. Betz, S. Samuels. HRIS 17. IRRD 605860 ACTIVE

(2) The Effect of Fillet Weld Termination on Cyclic Strength of Longitudinal Fillet Welded Joints in Aluminum. To determine by fatigue testing whether there is improvement in fatigue strength by detailing and controlling the method of terminating fillet welds at the ends of stiffeners, gussets and attachments. J.A. Lewis. HRIS 34. IRRD 605861. ACTIVE

c. Department of Mathematics: 2308 Newcastle, New South Wales, Australia

New Project

(1) Rectangular Routeing in a Circular City with Uniform and Independent Origins and Destinations. A study of the average distance traveled and the total number of crossings made by a commuter. R. Vaughan, E. Doyle. HRIS 55. IRRD 606641. (Citations) COMPLETE

New Projects

29. c. (2) Major and Minor Roads. A study as to why through traffic will use either or both types of roads. R. Vaughan. HRIS 55. IRRD 606650. (Citations) COMPLETE

(3) Distribution of Travel and Land Use Related to City Characteristics. The relation between city size, population and work force and the distribution of trips within the urban area. R. Vaughan. HRIS 13. IRRD 606642. ACTIVE

30. OCEANICS AUSTRALIA PTY LTD: P.O. Box 203, North Brisbane, Queensland

(6) Large Combination Vehicle. Establish practical and enforceable controls to improve safety and stability of long road trains. A. W. Chaseling. HRIS 53. (Citations) COMPLETE

31. ROYAL AUSTRALASIAN COLLEGE OF SURGEONS: Spring Street, Melbourne 3000

(2) Blood Alcohol and Road Crashes. Blood alcohol sample analysis to determine alcohol as a factor in crashes, its effect on diagnosis and management of victims, and help identify those with drinking problems to aid in rehabilitation. G. W. Trinca, F. T. McDeermott. HRIS 52. ACTIVE

(9) Trends in Australian Accident Mortality. Examination of the increase in road accident mortality while non-road accident mortality has decreased by an equal amount. E. C. Wigglesworth. HRIS 51. COMPLETE

(12) Effects of Seat Belt Legislation on Road Trauma Injuries. Study of the effects of compulsory wearing of seat belts first introduced in Victoria in 1970. G. W. Trinca, B. J. Dooley. HRIS 53. (Citations) ACTIVE

(13) Evaluation of Alternative Road Signs at Open Railway Level Crossings. To evaluate, by observation of driver behavior, reduction of road vehicle approach speed and increased driver awareness of trains caused by new type of railway crossing warning sign. E.C. Wigglesworth and S. K. Mackenzie. HRIS 54. IRRD 605390. INACTIVE

32. BUREAU OF TRANSPORT ECONOMICS: P. O. Box 367, Canberra, A.C. T. 2601.

(19) Bus Maintenance Costs. Establishment of relationships to facilitate the determination of bus operating and maintenance costs incurred in operating a number of different bus types under Australian conditions. J. Beck, I. Williams. HRIS 11. COMPLETE

(24) Intercity Passenger Travel. Survey of the factors determining modal choice of intercity passenger trips. A. B. Smith, P. Thomas. HRIS 12. COMPLETE

(32) Study of transport Supply Characteristics: Stage 1 - Road System Infrastructure. Investigate relationship between cost and capacity infrastructure leading to development of "resource cost of supply" functions. L. Lawlor. HRIS 16. COMPLETE

(33) Evaluation of Alternative Politices with Respect to Standard Urban Bus. To examine economic aspects of the adoption of a standard urban route bus. I. M. Williams. HRIS 11. COMPLETE

(34) Costs of Moving Wheat and Grains from Farm to Seaboard. A study of costs and methods of shipment and storage, both by rail and highway. D. Short, J. Cost, D. Dennes. HRIS 15. COMPLETE

(36) Urban Travel Demand. Examination of off-peak urban public transport travel. A. B. Smith. HRIS 16. COMPLETE

32. (39) Interregional Freight Movements (1975-76). To estimate the interregional freight movements by each mode and estimate flows along principal transport links. H. Quinlan, P.B. Thomas. HRIS 11. COMPLETE

(40) Truck Registration Data. To create a list of location and ownership of commercial vehicle fleets in Australia. H. Quinlan, P.B. Thomas. HRIS 11. COMPLETE

New Projects

(41) Factors Affecting the Utilization of Urban Commercial Vehicles. The respective roles of government and industry in solving the problems of the utilization of commercial vehicles. A. Currie. HRIS 13. IRRD 605930. ACTIVE

(42) Performance of the Australian Road System. To monitor the road system to aid the assessment of fund adequacy. W. Leslie, J. Miller. HRIS 12. IRRD 605931. ACTIVE

(43) Physical Description of Australian Road System. The current physical status of the Australian road system with trends. W. Aplin, J. Moll, S. Gunner. HRIS 15. IRRD 605932. ACTIVE

(44) Road Funding and Administration in Selected Overseas Countries. A study of the distribution between different levels of government in countries with a federal system of government. J. Maclean, R. Shaw. HRIS 14. IRRD 605933. ACTIVE

(45) Rural Local Government and the Provisions of Roads. The role and the importance of the road network in rural areas. G. Toomer, D. Scorpecci. HRIS 12. IRRD 605934. ACTIVE

(46) Regional Road System: A Case Study. To study a road system in a typical Australian rural local government area to identify special needs these areas. W. Leslie, J. Miller. HRIS 12. IRRD 606943. ACTIVE

(47) Value of Travel Time Savings for Use in Public Sector Evaluation. To develop a guide for users on the use and values of travel time savings in transport project appraisals. A. McKnight. HRIS 12. IRRD 606944. ACTIVE

34. P.G. PAK-POY & ASSOCIATES: 170 Greenhill Road, Parkside, South Australia 5063

(12) Metropolitan Adelaide Data Base Study. To prepare a range of synthetic models for policy, planning and strategy evaluation over the next decade, aimed at slow growth situation. M. J. Hutchinson, J. Symons. HRIS 12. COMPLETE

(14) Introduction of Computer Assisted Scheduling for ACTION, Canberra's Bus Service (CANVASS Project). Production of timetables, vehicle and crew schedules and roster through computer assistance. D.C. Kneebone, G. Thompson, P. Doble. HRIS 11. COMPLETE

(15) Use of Tours in Travel Demand Modeling. To explore incidence and features of tours (trips with a number of destinations) in 1977 metropolitan Adelaide transport study data and assess need for refining present travel demand modeling. M. Hutchinson. HRIS 16. IRRD 605391. (Citations) COMPLETE

(16) South Melbourne Cycle System Study. Using a household survey and group discussions with residents, to assess demand for bicycle facilities in South Melbourne. R. Skinner. HRIS 55. IRRD 605392. (Citations) COMPLETE

(17) South Melbourne Community Transport Study. To investigate and report on possibility for developing supplementary community transport services for South Melbourne. R. Skinner, R. Smith. HRIS 16. IRRD 605393. (Citations) COMPLETE

34. (18) Transportation for the Mentally and Physically Handicapped. To analyze existing provisions for transport of handicapped people in metropolitan Adelaide, ascertain how it can be improved, and develop a funding framework. D. C. Kneebone and others. HRIS 16. IRRD 605394. (Citations) COMPLETE

(19) Temporal Stability of Urban Travel Demand Parameters. To analyze 2 sets of data on transport, taken 10 years apart, for the small city of Launceston, examing stability of trip generation parameters and trip distribution model coefficients. M.J. Hutchinson, G.R. Thompson. HRIS 55. IRRD 605395. (Citations) COMPLETE

35. SWINBURN COLLEGE OF TECHNOLOGY, CIVIL ENGINEERING DEPARTMENT, JOHN STREET, 3122 Hawthorn, Victoria, Australia

New Projects

(4) Cement and Lime Stabilization of Pavement Subgrades. The development of a design approach incorporating the stabilized sub-base as a structural part of the pavement. J. Holland, C. Griffin. HRIS 24. IRRD 605927. (Citations) ACTIVE

(5) Development of an Economical and Rational Design Method for Steel Reinforced Concrete Roads Under Australian Conditions. To comprehensively define the state-of art into the design, construction and cost of concrete road paving. J. Holland, M. Bartnik. HRIS 24. IRRD 605929. ACTIVE

36. CAMERON, MCNAMARA & PARTNERS: 131 Leichhartdt Street, Brisbane, Queensland 4000

(2) Unsteady Flow Analysis of the Interaction of Tides and Floods. A study of the flood flows in tidal affected areas of streams. K.J. Morris. HRIS 22. COMPLETE

(4) Regional Flood Frequency Prediction Curves. A study of flood frequency curves for the Northern Territory, giving consideration to topography, rainfall and geology. I. G. Cameron, J. L. Irish. HRIS 22. COMPLETE

(6) Pioneer River Hydraulic Study. An investigation into hydraulic characteristics of the river for bridge design purposes. G.R. McKay, C. Apelt, J. Irish. HRIS 22. COMPLETE

(7) Pavement Design Study. Study of performance of urban pavement under service conditions, with four designs on different formation conditions of cut and fill. W. R. Faithful, C. J. James, G. Spencer. HRIS 24. COMPLETE

38. BROKEN HILL PTY. CO., LTD., CENTRAL RESEARCH LABORATORY: Shortland, N.S.W. 2307.

(2) Use of Steelworks Slag for Road Construction. Corporate research program on methods and materials for the modification of steelwork slag, with reference to the production of polish and abrasion resistant aggregate. P. G. Lanigan. HRIS 35. (Citations) COMPLETE

41. AUSTRALIAN IRON AND STEEL PTY. LTD., RESEARCH DEPARTMENT: Port Kembla, N.S.W. 2505

(3) Development of Blast Furnace and Steelplant Slags for Roadmaking Materials. To produce a blast furnace slag by controlled cooling for use as a skid resistant material in road surfacing. HRIS 35. COMPLETE

New Project

41. (4) Granulated Slag Stabilised to Form a Road Base. To produce a cheaper road base than currently available for lightly trafficked roads. D. Jones, S. Murrie. HRIS 35. IRRD 605918. ACTIVE

47. J.E. COWLEY & ASSOCIATES: 55 Campbell Street, 3150 Glen Waverley, Victoria.

(5) Victorian Heavy Commercial Vehicle (HCV) Operational Speed and Safety Study -- Accident Analysis. To study HCV safety to determine whether HCV speed limits should be raised toward those of lighter vehicles. J. E. Cowley. HRIS 54. IRRD 605396. (Citations) COMPLETE

(6) Australian Accident Studies of Speed Limits, Effectiveness of Motor Vehicle Design Rules and Characteristics of Rural Crashes. To evaluate speed limit provisions in the traffic code, review effectiveness of design rules, compare rural and urban crash problems, and prepare a mass data file on vehicle travel and accidents. J. E. Cowley. HRIS 51. IRRD 605841. ACTIVE

48. PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY: Box 793, Lae, Papua New Guinea.

(1) Forecasting Pavement Performance. To find if there is any relationship between climate and the weathering properties of New Guinea soils in order to predict the performance of these soils in pavement service. S. Kiek. HRIS 24. COMPLETE

(2) Traffic Accidents. A study of the nature of motor vehicle accidents in Papua New Guinea. R. L. Lynch. HRIS 51. COMPLETE

49. W. D. SCOTT AND COMPANY: PTY. LTD.: 100 Pacific Highway, 2060 North Sydney, New South Wales.

(5) Screening and Design Review of Road Betterment Projects. Assistance to Indonesian Highway Directorate in engineering and economic criteria for road and bridge betterment. Staff and consultants. HRIS 40. COMPLETE

(6) Organization and Management Assistance for the Indonesian Road Betterment Programme. To reinforce organization, management and procedures to ensure effective performance of a program of systematic betterment of some 12,500 kms of national and provincial roads, and monitor funds expended. Team. HRIS 11. COMPLETE

50. NICHOLAS CLARK AND ASSOCIATES: 55 Dundas Place, 3206, Albert Park, Victoria.

New Projects

(9) Non-Random Vehicle Flows and Implications for Warrants. A study of gaps in medium traffic flow at sites distant from traffic signals. G. Teale, S. Maclean. HRIS 35. IRRD 606643. ACTIVE

(10) Resource Costs of Motor Vehicle Use for the Journey to Work. Investigate costs of travel time, parking cost, depreciation, start-stop and direct operating costs for use by corridor studies by Victorian Ministry of Transport. S. McLean, L. Segal. HRIS 12. IRRD 606687. (Citations) COMPLETE

(11) Economic Evaluation of Second Bridge, Hobart. To study economic viability of contracting a second bridge at Hobart, primarily in case the Tasman Bridge should again be incapacitated. N. Clark, L. Segal. HRIS 12. IRRD 606668. (Citations) COMPLETE

New Projects

50. (12) Commercial Vehicle Fuel Costs. The study will investigate fuel costs of operating various vehicle types on diesel, LPG, gasoline and other alternative fuels. A. Maclean, G. Teale, N. Clark. HRIS 17. IRRD 606689. ACTIVE

(13) Economics of Transport Energy Use. The economics of transport energy is investigated for improvement in operating decisions concerning energy use. N. Clark. HRIS 17. IRRD 606945. (Citations) ACTIVE

(14) Bus Lane Evaluation. A before and after study of an aterial road bus lane effect on normal operating procedure. A. Maclean, D. March. HRIS 54. IRRD 606690. (Citations) COMPLETE

(15) Effects of Fuel Supply Disruption on Traffic Flows. From a previous disruption in fuel supply, the nondirect cost penalties are examined as well as changes in traffic flow patterns. G. Teale. HRIS 17. IRRD 606691. ACTIVE

51. NEW SOUTH WALES, BUREAU OF CRIME STATISTICS AND RESEARCH GOODSELL BUILDING, 8-12 Chifley Square 2000, Sydney, New South Wales, Australia

New Project

(1) Penalties and the Drink-Driver: A Study of 1000 Offenders. To determine the specific deterrent effect of penalities on convicted drink/drivers, as well as determine the optimum period of license disqualification. R. Homel. HRIS 52. IRRD 606616. (Citations) COMPLETE

(2) Evaluation of Sydney Drink-Driver Rehabilitation Programms. The study will evaluate the degree of success of the pilot phase of the Sydney drink-drive rehabilitation program. A. Sutton. HRIS 52. IRRD 606617. (Citations). ACTIVE

52. ROAD TRAFFIC AUTHORITY: RESEARCH AND STATISTICS DIVISION: 22 Mount Street, Perth, W.A. 6000

(4) Increased Intensity of Traffic Law Encorcement as a Means of Reducing Accidents. A before and after experimental design to undertake a pilot study. C. Saunders. HRIS 51. COMPLETE

(7) Effect of Increased Traffic Law Enforcement in Western Australia. To evaluate study methodology for determining effectiveness of increased enforcement on reducing accidents and related driver behavior, in a controlled study area. C. Saunders. HRIS 51. COMPLETE

(8) A Study to Determine the Optimal Deployment of Aerial Patrols in Western Australia. To develop and implement experimentation for evaluating safety effectiveness of airborne highway patrols. C. M. Saunders. HRIS 51. IRRD 605397. (Citations) COMPLETE

(10) An Analysis of the Effect of Restraint Devices Upon Traffic Casualties Among Children. To relate use of child seats, harnesses, and seat belts to 6 months' traffic injury data of admissions to a major children's hospital. P.P. Standen. HRIS 51. IRRD 605399. (Citations) COMPLETE

(12) Motorists' Attitudes to Common Traffic Offenses. Comparison of the attitudes of drivers towards the degree of seriousness of some 40 different driver behaviors as acceptable practices. C.M. Saunders, G. Maisey. HRIS 51. IRRD 605831. ACTIVE

New Project

52. (13) The Practical Driving Test Administered to Applicants for Motor Drivers Licences. A review of the results of driving tests given throughout the State during a one month period showing a tabulation of the driving faults recorded. HRIS 51. IRRD 605919. ACTIVE

53. SNOWY MOUNTAINS ENGINEERING CORP;: Monaro Highway, 2630, Cooma, N.S.W.

(3) Use of Landsat Imagery in Road Development. Preliminary study underway into use of standard photographic Landsat imagery for road location, location of construction materials, and flood studies in S.E. Asia. E. Newberry. HRIS 21. IRRD 605402. INACTIVE

(4) Use of Coral in Road Pavement and Concrete Construction. Charts and procedures developed for concrete made from crushed lava aggregate and unwashed coral sand; various methods being used to apply bituminous surfacings to coral pavements. F.R. Vines. HRIS 35. IRRD 605403. (Citations) COMPLETE

(5) Developments of a Digital Terrain Model (DTM) From Ground Survey Observations. Developing DTM from surveyor's observation of ground surface along traverse line. E. Newberry. HRIS 21. IRRD 605404. COMPLETE

(6) Regional Stormwater Model. To develop computer program to simulate runoff hydrographs from catchments. A. P. Aitken and others. HRIS 22. (Citations) ACTIVE

New Project

(7) Use of a Digital Terrain Model Asan Aid to Road Design. The DTM is developed from ground surveys into a computer program which will yield all information, including perspectives, to produce a finished roadway design. E. Newberry, R. Bartlett. HRIS 21. IRRD 606946. ACTIVE

54. ALAN M. VOORHEES AND PARTNERS, PTY. LTD.: 130 Kennedy Terrace, 4064 Paddington, Queensland.

(3) Priority Bus Lanes. To design bus lanes for Melbourne inner suburban arterial and circumferential roads, predicting effects on bus travellers, traffic flow, parking, access to adjacent properties, and bus stop relocation. D. Johnston. HRIS 11. IRRD 605406. (Citations) COMPLETE

(5) Priority for Commercial Vehicles. A review of existing techniques around the world in urban areas and the feasibility of providing preferential treatment such as parking privileges, loading and turning zones, etc. W. Steeper. HRIS 54. IRRD 605850. (Citations) COMPLETE

56. WILBUR SMITH AND ASSOCIATES PTY. LTD.: 307 Queen Street, 4000 Brisbane, Queensland.

(11) Traffic Flow Study. To provide a method for assessing the impact of traffic flow changes at road and road/rail intersections. T.W. Thompson. HRIS 55. IRRD 605893. COMPLETE

58. DEPARTMENT OF TRANSPORT OF AUSTRALIA: 35 Elizabeth St., 3000 Melbourne, Victoria.

(12) Evaluation of Head Restraints. Analysis of injury compensation claims to evaluate Australian Design Rules for head restraints. M.H. Cameron. HRIS 53. COMPLETE

58. (16) Evaluation of Publicity Campaign for Increasing Usage of Restraints by Children. Roadside surveys to be used in evaluating effectiveness of radio and press campaign. C.J. Boughton and others. HRIS 51. IRRD 605407. COMPLETE

(17) Integrated Mass Data File of Accident, Registration and Vehicle Mileage Records. Analysis of previously collected data to produce accident rates with a measure of exposure. W.M. Callaghan, B.R. Lancashire. HRIS 51. IRRD 605866. (Citations) COMPLETE

(18) Use and Regulation of Mopeds. A review of the need for both Commonwealth and State governments to establish uniformly applied requirements for moped definition and use. A.J. Carter. HRIS 51. IRRD 605867. (Citations) COMPLETE

(19) Current Rural Free Speeds in Australia. Surveys of vehicle free speeds in Australia, with guidelines for collection of such data, and a tabulation of the speeds for various classes of vehicles. W.M. Callaghan. HRIS 55. IRRD 605868. (Citations) COMPLETE

59. ROAD SAFETY AND TRAFFIC AUTHORITY: 801 Glenferrie Road, 3122 Hawthorn, Victoria.

(1) Evaluation of the Role of Attitudes in Advanced Driving Course Students. A comprehensive questionnaire survey of driving record and attitudes to road safety amongst advanced driving course students and a control group. P. Strang. HRIS 51. IRRD 606962. INACTIVE

(3) Requirements for Traffic Control in the Local Street System. Providing information relating to intersection traffic control and the limitation of through traffic in residential streets. HRIS 54. COMPLETE

(5) Development of a Motorcycle Training Course. Evaluation of a proposed training course by intermediate measures and subsequent riding record. P. M. Strang. HRIS 51. IRRD 606963. INACTIVE

(7) Evaluation of a Driver Training Complex. Assessment of training at off-road complex to investigate specific aspects of the use of driving range for initial driver training. P.M. Strang, S. Manders. HRIS 51. IRRD 606964. ACTIVE

(9) Pavement Marking Materials and Methods. Investigation of paints, thermoplastics, and reflective studs to determine most appropriate material for day and night-time use. B. Jan, J. Randall. HRIS 34. ACTIVE

(17) Motor Cycle Accidents and the Possibility of Graded Licenses for Riders. To examine the accident experience of motor cyclists and related conditions with the value of introducing graded licenses. Staff. HRIS 51. INACTIVE

(20) Accident Reporting. To collect data and its analysis with the objective of developing a standard system of reporting. Staff. HRIS 51. ACTIVE

(22) Accidents and the Interim "Give Way to the Right" Control on Major Roads. To determine the effectiveness of this interim control in terms of accident frequency. Daltrey, Prasmutas. HRIS 51. COMPLETE

(23) Alcohol Publicity Evaluation. Survey and questionnaire evaluation and development of drink/driving publicity. R.S. James, J.S. Berenyi, P.M. Strang. HRIS 52. ACTIVE

(24) Child Restraint Usage. To evaluate the effects of legislation on the use of child restraints. J. Randall, G. Tierney. HRIS 53. COMPLETE

AUSTRALIA (contd)

59. (25) Effect of the Introduction of the Major/Minor Priority Rule (METCON) on Accident Frequency. To evaluate the change in frequency in Metropolitan Melbourne effected by this rule, to replace the "Give Way to the Right Law" which still prevails in residential street intersections. Daltrey, Prasmutas. HRIS 51. COMPLETE

(26) Evaluation of the Changed Maximum Speed on Victorian Highways. To analyze the effect of this change on highway casualties, particularly in terms of road design and construction standards. Healy. HRIS 51. COMPLETE

(27) Evaluation, Design and Specification of Traffic Signal Control Equipment. Determine most cost effective signalization strategy over the heirarchy of the streets, review specifications of equipment. E.F. Cleary, F. Hartley, J. McL. Stevenson. HRIS 54. COMPLETE

(28) Audio Tactile Detector Investigation. Evaluation in terms of effectiveness and function. P. Cornwell. HRIS 54. IRRD 606965. ACTIVE

(29) Motor Cycle User Exposure. To delineate motorcycle usage by rider characteristics, motorcycle engine size and accident involvement. H. T. Wood, D. J. Healy. HRIS 52. IRRD 606966. ACTIVE

(30) Pre-License Experience of Motorcyclists. A questionnaire survey of the extent of pre-licencing riding. R.S. James, J. W. Berenyi, P.M. Strang. HRIS 51. (Citations) COMPLETE

(31) Random Breath Test Evaluation. An enforcement study with comparison of blood alcohol levels of injured drivers, designed to evaluate new legislation. P.M. Strang, M.H. Cameron, R.S. James, J.S. Berenyi. HRIS 52. COMPLETE

(33) Seat Belt Usage. To evaluate the effects of legislation on the use of seat belts. D. Andreassend, G. Tierney. HRIS 51. COMPLETE

(34) System of Selective Vehicle Detection and Priority Treatment in Mixed Traffic Flow. Measure the advantages of high occupancy preference system, evaluation and investigation of equipment available. J. McL. Stevenson, G. Garkeek. HRIS 54. INACTIVE

(35) Traffic Detection Equipment. Improve detector reliability, accuracy, flexibility, and develop to measure speed and headway, so as to detect public vehicles. F. Harley. HRIS 54. INACTIVE

(36) 40 Km/h Speed Limit in Residential Areas with Particular Reference to Bicycle Use. Evaluation of the effect on speeds and through traffic volumes by the imposition of the 40 km/h limit on residential streets. H. T. Wood. HRIS 54. COMPLETE

(37) System Description of Drinking-Driving Countermeasures in Victoria. As a base for improving present countermeasures and developing new ones, to collect systematically all data on the drinking-driving problem and efficacy of existing countermeasures. J. Hendtlass, J. Bock. HRIS 52. IRRD 605408. ACTIVE

New Projects

(38) "Checkmate Safety Speed Selector" - Controlled Field Evaluation. To evaluate accident frequency severity or cost reduction and/or fuel savings which may result from installation of a governor device in a selected sample of government vehicles. P. Heisler, M. Bishop, P. Gersh. HRIS 53. IRRD 606967. ACTIVE

AUSTRALIA (contd)

New Projects

59. (39) A Comparison of the Accident Involvement Characteristics of Probationary and Standard Car Licence Holders in Victoria. As part of the "Young Driver Problem" the study will involve probationary (first 3 years of driving) compared to standard licence holders. D. Healy. HRIS 51. IRRD 606981. ACTIVE

(40) An Evaluation of the Effectiveness of Traffic Signals Installed in Victoria During 1976-1978 in Reducing Accidents. Study involves a comparison of accidents 1972-1979 and signalized sites 1976-1978 as against a controlled group installed prior to 1972. R. Daltrey. HRIS 51. IRRD 606982. ACTIVE

(41) Bicycle Detection Experiment. By various vehicle detectors and loop configurations to determine which combination is best. P. Cornwell. HRIS 55. IRRD 606983. ACTIVE

(42) Evaluation of the Victorian Learner Permit Test. An assessment of the theoretical part of the learner permit test led to recommendation that a full-scale revision of the test be undertaken. K. Deutsh, G. Davis. HRIS 51. IRRD 606980. COMPLETE

60. NAASRA STUDY TEAM: 343 Castlereagh Street, 2000, Sydney, New South Wales, Australia.

(2) Road Maintenance Standards Costing and Management. Establish standards, costing of operations, budgeting system, overall management and develop system to determine adequacy of maintenance. HRIS 40. COMPLETE

New Projects

(3) Road Inventory on Computer Known as NAASRA Data Bank System. To develop a uniform computer based system for handling road and bridge inventory. D. Linsten. HRIS 12. IRRD 606618. (Citations) ACTIVE

(4) Operation of Large Combination Vehicles (Road Trains). A working party study will seek to unify the use of, and conditions of operation of road trains throughout the various parts of Australia. J. Widdup, K. Baldock, R. Barnard, T. Parminter, R. Searles, R. Vaughan. HRIS 53. IRRD 606619. (Citations) ACTIVE

63. NEW ENGLAND UNIVERSITY: 2351, Armidale, New South Wales, Australia

b. Department of Physics.

New Project

(1) Motor Traffic Noise. To survey noise emission from vehicles and correlate the results with standards. N. Fletcher. HRIS 17. IRRD 606604. ACTIVE

64. METROPOLITAN (PERTH) PASSENGER TRANSPORT TRUST: 10 Adelaide Street, 6000 East Perth, Western Australia.

(3) Computer Aid to Scheduling. A feasibility study of a computer-based system as an aid to the manual function of bus and crew scheduling. R. J. MacDonald. HRIS 11. IRRD 605842. (Citations) ACTIVE

65. DIRECTOR GENERAL OF TRANSPORT, WESTERN AUSTRALIA: 68 St. George's Terrace, Perth 6000

(4) Southern Western Australian Transport Study. Recommendations for revisions to existing freight transport policies. Staff. HRIS 11. COMPLETE

(9) Accident Costs. To determine the cost of accidents for use in the appraisal of law enforcement methods, accident prevention schemes, as well as road investments. F. Gallagher. HRIS 51. COMPLETE

(10) Transport Strategies for Metropolitan Perth (Perth 2000). To consider broad long term scenarios in the context of short/medium term urban transport policies. H. Wildermuth, K. Hodgkin, N. Parkhurst. HRIS 13. IRRD 606605. (Citations) ACTIVE

(11) Monetary Values of Work Journey Characteristics. Analysis of the values attached to various aspects of the journey-to-work, both monetary and user aspects, such as having a seat, type of bus, smoothness of car ride, as well as factors of walking and riding time. H. Wildermuth. HRIS 15. IRRD 606606. INACTIVE

(12) Marketing Urban Public Transport. Segmentation of urban travellers into different markets; determine potential scope for public transport; and enable the product to begeared accordingly. G. Bettison, H. Wildermuth and consultants. HRIS 11. COMPLETE

(15) Land Use/Transport Interaction Modelling. To consider stresses, pressures, etc. placed on accepted land use strategy by road investments, traffic regulation policies, and public transport operating practices. K. Hodgkin. HRIS 12. COMPLETE

68. COOPERS & LYBRAND SERVICES: G.P.O. Box 2650 Sydney, N.S.W. 2001

(2) Automatic Collection of Maintenance Costs. Develop a system of collecting and reporting on maintenance costs in various categories. J.P. Bragg, R.J. Haywood, H.W. Springford, G.J. Cole, L. Roberts. HRIS 11. (Citations) COMPLETE

69. TRAFFIC AUTHORITY OF NEW SOUTH WALES: 52 Rothschild Ave., 2018 Rosebery, N.S.W.

(1) Bus Priority at Isolated Signals and Signal Systems. Survey of different sites and strategies and carry out economic analysis of implementation of bus detection and controller adaption. C. Hallam, S. Moore, PAK-POY Consultants. HRIS 54. COMPLETE

(2) Car Pooling on a Geographic Basis. Survey of commuter attitudes to car pooling and determine what incentives would be most likely to encourage such. M. G. Rao. HRIS 16. COMPLETE

(4) Bicycle Use as Transport Mode-Attitude Survey. To carry out an attitude survey to ascertain whether incentives and removal of certain constraints would encourage increased use of bicycles as a transport mode. K. Fehon, L. Marshall & associates. HRIS 13. COMPLETE

(5) Metropolitan Parking Policy. To examine all aspects of existing parking policies related to both on and off street use in the Sydney area. F. Bezer. HRIS 54. COMPLETE

69. (6) Traffic Law Observance-Influence of Penalties and other Deterrents. To identify the relative value that the public would place on various mixes of risk and consequence and in defining and quantifying appropriate consequences and their anticipated effects. D. Franklin, M. Rao. HRIS 51. COMPLETE

(7) Left Turn on Red Signal. To establish whether or not left turns should be allowed at full red signal. C. Hallam, G. Hodgkinson. HRIS 54. IRRD 606644. ACTIVE

(8) Social and Economic Costs (and Benefits) of Extended Clearways. To identify and evaluate the social and economic costs and benefits of extending clearways beyond the present weekday peak hour operation. C. Hallas. HRIS 15. COMPLETE

(10) Application of Comprehensive Transport System Management Technique to Arterial Routes. To study selected arterial routes in metropolitan Sydney and estimate benefits and costs of priority measures such as signal modification, no-standing zones, etc. C. Hallam and others. HRIS 11. IRRD 605409. (Citations) COMPLETE

(11) Effects of Flexitime and Staggered Work Hours on Transport. Using questionnaires, to study the effects of these work time schedule changes on the Sydney transport system. M. Rao, S. Moore, I. Booth. HRIS 11. IRRD 605410. COMPLETE

(12) Feasibility of Providing Bikeways. Feasibility study of bikeways in 2 suburbs of Sydney, examining best route, width, cost, and interaction with other traffic. K. Fehon, R. Fleming. HRIS 13. IRRD 605411. COMPLETE

(13) Impact of Land Use on Traffic. To identify and categorize various types of land use, then to develop and calibrate traffic generation models for different categories. C. Hallam and others. HRIS 15. IRRD 605412. (Citations) ACTIVE

New Projects

(14) Application of Comprehensive Transport System Management Techniques to Arterial Routes-Stage 2. To develop simulation model to determine the effects of proposed main road transit lane on surrounding street systems. C. Hallam, A. Mehta. HRIS 12. IRRD 606645. ACTIVE

(15) Newcastle Bikeway Study. To develop an effective bicycle safety education program. K. Fehon, W. Lethrop. HRIS 51. IRRD 606646. ACTIVE

(16) Collision with Roadside Objects. To determine the hazard potential of roadside objects so as to determine remedial action. S. Moore, R. Simons, R. Nairn. HRIS 51. IRRD 606647. ACTIVE

70. ROAD ACCIDENT RESEARCH UNIT, DEPARTMENT OF HEALTH: 555 Collins Street, Melbourne, Victoria 3000.

(1) Multidisciplinary Accident Study. Sociological, medical, mechanical and environmental data collected on a random 2% of all ambulance call traffic accidents and 50% fatal accidents for 1975 in and around Melbourne metropolitan area. E. Rubenstein, L. Douglas-Smith, L. Fusinato, Y. Youngman. HRIS 51. COMPLETE

71. DEPARTMENT OF TRANSPORT, SOUTH AUSTRALIA: Victoria Square, 5000 Adelaide, S.A.

(1) Transport Pricing and Costs. To develop a model to determine operating costs of buses to be used as input to the planning process, as well as to aid in developing rational pricing policies for all modes of urban transport. M.M. Starrs. HRIS 12. ACTIVE

(2) Urban Bicycle Tracks and Facilities. To set up guidelines for planning of bicycle tracks in the metropolitan area and to undertake small scale planning studies in particular areas. M.M. Starrs. HRIS 12. COMPLETE

(3) Rail Pedestrian Crossing Warrants. To establish warrants for railway pedestrian crossings and the degree of protection appropriate to various situations and traffic conditions, identify crossing demand and unauthorized use. I. D. Richards. HRIS 54. ACTIVE

(4) North-East Area Public Transport Review. A study involving major initiatives in community consultation to determine steps to be taken to provide basis of the public transport system to the end of the century. J. W. Hutchinson, K. T. Norley. HRIS 13. COMPLETE

(6) Electronic Destination Signs. To remove operating restrictions imposed due to roller blind destination signs and provide an identification source of route numbers for future passenger counting and ticket machine systems. HRIS 54. (Citations) COMPLETE

(7) Bus Passenger Data Logging. To determine if a system can equal the performance of manual logging, and establish the most cost efficient system for State Transport Authority buses. R. M. Pullem. HRIS 11. (Citations) ACTIVE

(8) Bus Location Systems. To establish best and most cost effective technique to use in the Adelaide area, and investigate the viability of an on-line system. R. M. Pullem. HRIS 11. (Citations) ACTIVE

(9) Bus Operations Study. To establish procedures for identifying and evaluating means of improving bus operations through alterations to current traffic management procedures. D. Bray. HRIS 11. (Citations) ACTIVE

(10) Transport Innovations. Study of P.R.T. system for Metropolitan Adelaide Study of low cost innovative para-transit system to improve public transport in Adelaide. P. Skene. HRIS 12. (Citations) ACTIVE

72. ROAD TRAFFIC BOARD: P.O. Box 19, Walkerville, South Australia 5081

(1) Area Traffic Management Study. To study the effect on accident occurence of an area traffic management scheme in which priority is given to buses at all intersections and junctions by give way and stop signs. [illegible] Bishop. HRIS 54. IRRD 606620. ACTIVE

73. SCHOOL OF CIVIL ENGINEERING, SOUTH AUSTRALIA INSTITUTE OF TECHNOLOGY: Levels Campus, 5098 Ingle Farm, South Australia.

(5) Performance of Deflectors for Gutter Side Entry Pits. To provide design information on the various deflector shapes commonly used to divert stormwater into urban road-wayside entry pits. J.R. Argue. HRIS 22. (Citations) COMPLETE

(6) Effects of Road Closures. To monitor the effects of road closure arising from area traffic control schemes. S.G. Leek. HRIS 54. IRRD 605811. ACTIVE

73. (7) Model Simulation of Prototype Gutter/Pavement Flows. To determine the bed roughness configuration required of a half-scale roadway model to correctly reproduce prototype velocity distributions. J.R. Argue. HRIS 22. IRRD 605812. (Citations) ACTIVE

New Project

(8) Effect of Lime and Flyash on Clay Soils for Pavement Construction. Three heavy clays encountered in Adelaide are being tested to determine comparison of lime-fly ash versus lime alone on unconfined compressive tests. M. Linn, M. Symons. HRIS 62. IRRD 606947. ACTIVE

74. MELBOURNE AND METROPOLITAN TRAMWAYS BOARD: 616 Little Collins Street, 3000 Melbourne, Victoria.

(2) Bus Priority at Traffic Signals-Trial Evaluation. To establish the effects on all road users of providing priority for buses at traffic signals. HRIS 54. COMPLETE

(3) Traffic Separation Study. To investigate effects on tram and motor vehicle movement of separation by concrete safety bars at 4.5 metre intervals. H. McKenzie. HRIS 55. IRRD 605416. (Citations) COMPLETE

75. DEPARTMENT OF COMMUNICATION ENGINEERING, LA TROBE UNIVERSITY: Bundoora, Victoria 3083.

(1) Improvements on Loop Detector Systems. To perform a series of initial experiments on the use of low-cost large-scale-integration circuits to improve performance of existing vehicle-detecting loops. G.R. Hedley, S. Besford. HRIS 54. COMPLETE

(2) Implementation of Local-Area Traffic Control without Communication Links. To investigate and demonstrate means of using intelligent controllers to manage traffic flow through small numbers of adjacent intersections without the use of communication links between controllers. G. R. Hedley, L.H. Ding. HRIS 54. COMPLETE

(4) Loop Detector Systems in Pavements. To establish experimentally the sensitivity limits of the Latrobe detector and determine what data, in addition to vehicle presence can be extracted from normal inductive loops using a programmable digital detector. D. Hooper. HRIS 54. IRRD 605814. ACTIVE

76. SCHOOL OF ECONOMIC AND FINANCIAL STUDIES: MACQUARIE UNIVERSITY: North Ryde, N.S.W. 2113.

(1) Study of Transport Operations. Assess the effects of a 20% fare reduction in Sydney; develop a methodology for identifying and evaluating inadequacies of personal transport service; investigate methods used to identify and evaluate determinants of travel choices. D. Hensher, R. Bullock. HRIS 11. (Citations) COMPLETE

(5) Hidden Subsidies in Downtown Commuter Parking. To assess the extent to which hidden subsidies go to employees who park in company provided parking areas, and the extent to which private parking eliminates consideration of modal choice. D.A. Hensher. HRIS 16. IRRD 605766. INACTIVE

(7) Choice, Demand and Functional Form. To develop a theory and algorithm to explain the decision making process and choice made by an individual in route selection. D.A. Hensher, T.V. Truomg. HRIS 13. IRRD 605768. ACTIVE

AUSTRALIA (contd)

76. (8) Individual Choice Model Variables. To develop a methodology to estimate optional functional form of variables in individual choice models. L. W. Johnson. HRIS 13. IRRD 605769. COMPLETE

(9) Effect of Reopening the Tasman Bridge on Mode and Route Choice. To predict the effects of this bridge reopening, using advanced individual choice modelling techniques. D.A. Hensher. HRIS 13. IRRD 605770. (Citations) COMPLETE

(11) Residential Mobility and the Influence of Transport. To develop a model (theory and data) to determine relationship between residential mobility per unit of time and the availability of alternative forms of transport. D. A. Hensher, A. Taylor. HRIS 13. IRRD 605772. COMPLETE

(13) Energy Conservation and Transport Policies. To assess the success/failures of alternative urban transport policies from the standpoint of energy conservation. K. Schou, D.A. Hensher. HRIS 11. IRRD 605774. (Citations) ACTIVE

(14) Development of an Urban Transport Policy and Strategy. To formulate a comprehensive policy on urban transport, with particular emphasis on the broader nature of the urban process, tracing the major events and issues that have influenced the environment of transport planning. D.A. Hensher. HRIS 12. IRRD 605859. (Citations) INACTIVE

New Projects

(15) A Dynamic Disaggregate Model of Vehicle Fleet Choice. To develop and estimate a dynamic logit model of vehicle fleet choice behavior based on random utility theory which involves identification of factors which influence this behavior. V. Le Plastrier. HRIS 12. IRRD 606968. ACTIVE

(16) Individual Preferences - Choice Proportions and Tradeoffs. Aim is to discuss theory and methods for deriving full ratio scale measures of individual tradeoffs and choices in transport matters. D. Hensher, J. Louviere. HRIS 11. IRRD 606969. ACTIVE

(17) Dynamic Discrete Choice Model of Car Ownership and Utilization. To develop a panel data set of 3000 households in Sidney where for 5 years acquisition disposal and maintenance of their motor vehicles, usage of them and expectations of fuel price increase will be studied. D. Hensher. HRIS 13. IRRD 606970. ACTIVE

(18) Car Acquisition Process at the Household Level. To examine car acquisition process at the household level by developing a choice model based on: 1) whether or not to buy, 2) what to spend and 3) what type to buy. T. Sparks. HRIS 13. IRRD 606971. ACTIVE

80. MELBOURNE AND METROPOLITAN BOARD OF WORKS: 625 Little Collins Street, Melbourne, Victoria 3000

(1) Future Urban Transportation. Assess the direct and indirect impact of developments in technology in regard to a desirable urban transportation system in keeping with the Board's strategic planning policies. R. J. Bartholomew. HRIS 13. COMPLETE

(2) Hierarchy of Roads Study (Urban Area). To establish relations between road hierarchy and land use and determine guidelines to ensure a balance between the requirements of mobility, access and amenity. W. J. Taylor. HRIS 15. IRRD 606917. (Citations) ACTIVE

80. (5) Dual Role Automatic Guideway. Develop specifications for a dual mode PRT system in Melbourne urban area capable of forming the basis of a realistic implementation policy. R. J. Bartholomew. HRIS 15. COMPLETE

(6) Influence of Subregional Structure on Public Transport and Car Usage. To measure effects of different population distributions within subregional areas on usage of public transport and automobiles. W.J. Taylor, J. Loder. HRIS 13. IRRD 605417. (Citations) COMPLETE

(7) Study of Parking Specifications with Respect to Public Transport Availability. To provide a way to adjust parking requirements of the metropolitan plan to the level of public transport provided in specific locations. W. J. Taylor, R. J. Nairn. HRIS 54. IRRD 605418. ACTIVE

New Projects

(8) Transport Effects on the Pattern of Land Use Development. To develop appropriate computer programs to enable examination of future patterns of land use development and to test the likely transport effects. W. Taylor. HRIS 15. IRRD 606918. ACTIVE

(9) Road System NonUrban Areas. To complement the hierarchy of urban area roads study in order to provide for extension of functionally based road classification, associated traffic and land use management to non urban area of authority's planning area. W. Taylor. HRIS 12. IRRD 606919. ACTIVE

(10) Melbourne Containment Study. Studies made of ways to move to a less dispersed, more contained Melbourne. The transport effects of various options have been tested. W. Taylor. HRIS 12. IRRD 606920. (Citations) COMPLETE

81. LOCAL GOVERNMENT ENGINEERS ASSOCIATION OF NEW SOUTH WALES: Room 407, 661 George Street, Sydney, N.S.W. 2000.

(1) Machine Extruded Kerb and Gutter Concrete Strengths. To determine concrete strengths in kerb and gutter constructed by the extrusion machine. I. Moore, R.E. Baker. HRIS 41. ACTIVE

(2) Land Subdivision Road Standards. Prepare a model code to contain standards for road design and construction as applied to land subdivisions. R.E. Baker, I. Moore, W. Forbes, C. Stephens, E. Anderson. HRIS 21. ACTIVE

82. CAULFIELD INSTITUTE OF TECHNOLOGY, DEPARTMENT OF CIVIL ENGINEERING: 900 Dandenong Road, Caulfield East, Victoria 3145

(2) Linking and Synchronization of Traffic Signals. Study existing traffic conditions and signal timing at two intersections and evaluate the linking and synchronization of them, as part of study concerned with linking of signals over longer distances on arterial routes. G. Moffet. HRIS 54. COMPLETE

(3) Use and Abuse of ALCOMETERS; Traffic Conflicts at Shopping Center. Investigate behavior of hotel patrons towards the ALCOMETER; investigate the turning movements in the shopping center and how they affect flow of traffic. K. Sharp. HRIS 55. COMPLETE

(6) Optimizing Melbourne's Existing Arterial Road System with Respect to Low Cost High Value Improvements. To investigate low cost schemes aimed at causing little disruption to the urban structure, as a result of continued growth of traffic and public opposition to large scale road improvements. R. Taylor. HRIS 15. COMPLETE

82. (8) Effect of Minimum AFFLUX Culverts in Reducing Road Construction Costs. To show that the use of minimum AFFLUX theory in the design of culverts under a road passing through a flood plain will provide significant construction savings. G. McKelvy. HRIS 22. COMPLETE

(9) Traffic Intrusion in Residential Streets. To study the degree of intrusion at three localities chosen because of lack of continuity of the arterial system. W. Degnan. HRIS 55. COMPLETE

(11) Drainage Problems at Flat Wide Bituminous Pavements. Particularly the Eastern Freeway. Investigation of various solutions to the special hazards that arise from high speed operation on wet pavements. T. Boyd. HRIS 22. COMPLETE

(12) Investigation into Local Shopping Areas. Investigation of such aspects of shopping centers as shopping area, revenue, parking and public transport. R. Conway, P. van Wyk. HRIS 16. COMPLETE

(13) Traffic Problems Associated with Shopping Centers. Analysis of such factors of shopping center problems as facilities available, the road infrastructure, parking, environmental protection, etc. E. Vocetich, I. Barnes. HRIS 16. COMPLETE

b. Department of Applied Psychology: Same address.

(1) Survey of Driver Training Practices for Revision of a Series of "How To Drive" Films. A critical survey of existing series so as to provide specifications for the revised series. C. Cameron, P. Davidson. HRIS 52. IRRD 605875. ACTIVE

84. MELBOURNE CITY COUNCIL: Swanston Street, 3001, Melbourne, Victoria.

(1) Computerization of the Traffic Signal System. A pilot study to investigate computerization, using existing on-street equipment, of part of the CBD and 1 main arterial road. K. Jordan, N. English. HRIS 54. IRRD 605419. ACTIVE

(2) Computerization of the Traffic Signal System: Computer Program for a Traffic Signal System. To develop a system that will utilize input signals from traffic detectors, and send output signals to adjust the signal system to provide the most efficient use of the street system. K. Jordan, N. English. HRIS 54. IRRD 605847. (Citations) ACTIVE

85. SCOTT & FURPHY ENGINEERS PTY. LTD.: 390 St. Kilda Rd., 3004, Melbourne, Victoria.

(1) Accessibility Study--Outer Eastern Region 16. To get information on and formulate solutions to (1) Roads -- short-and long-term difficulties; (2) Routing, frequency, and costing problems of public transport; (3) Pedestrian and bicycle facilities; (4) Social, environmental, economic implications of transport etc. M. Collie. HRIS 90. IRRD 605420. COMPLETE

87. NORTHERN MELBOURNE REGIONAL ORGANIZATION OF COUNCILS NO 14 (VIC): Civic Centre, Civic Drive, 3088, Greensborough, Victoria.

(1) To Maximize Transport Opportunities in Region 14, Emphasizing Mobility Problems of the Carless and an Improvement of Existing Public Transport. B. McNamara. HRIS 16. IRRD 605422. (Citations) COMPLETE

88. WESTERN AUSTRALIAN INSTITUTE OF TECHNOLOGY, DEPT. OF CIVIL ENGINEERING: Hayman Rd., 6102, South Bentley, Western Australia

(1) Effects of Varying Levels and Types of Enforcement on Intersection Accidents. To investigate this problem by traffic conflicts technique and observations of violations, and to evaluate effectiveness of mechanical surveillance units. L. Millar. HRIS 51. IRRD 605423. (Citations) COMPLETE

90. OVE ARUP TRANSPORTATION PLANNING: 406 Collins Street, 3000, Melbourne, Victoria.

(1) Environmental Traffic Capacity of Roads. To develop an approach to the calculation of road traffic capacities on the basis of environmental criteria, using noise generation and pedestrian delay characteristics of traffic streams. D. J. Singleton, J. Holdsworth. HRIS 55. IRRD 605832. (Citations) ACTIVE

(2) Fare Concessions, Fare Collection and Passenger Trend Analysis. Analysis of the various fare systems and collection methods suitable for public transport operation and make recommendations on their possible utilization for the 220 route private bus network of Melbourne. D. Singleton. HRIS 16. IRRD 605833. (Citations) COMPLETE

New Project

(3) Engineering Manual for Bicycle Planning. To produce an engineering manual for use in planning bicycle networks covering all relevant traffic engineering. G. Holdsworth. HRIS 12. IRRD 605913. ACTIVE

92. WOLLONGONG UNIVERSITY, DEPARTMENT OF CIVIL ENGINEERING: Northfields Avenue 2500 Wollongong, New South Wales.

(1) Structural Damage to Pavements Caused by Heavy Commercial Vehicles. To evaluate the performance of pavements subjected to repeated loading of heavy vehicles. D. Pearson-Kirk. HRIS 24. IRRD 605829. ACTIVE

94. FRANCKI AND CASEY CONSULTANTS: Chandos Street, 2065 St. Leonards, New South Wales.

(1) School Safety Aids. Surveys of all schools in the Sydney Metropolitan Area with a view to providing additional traffic control facilities for optimum safety of school children. M. Francki, P. Casey. HRIS 54. IRRD 605851. (Citations) ACTIVE

96. ST. VINCENTS HOSPITAL: Victoria Parade, 3065, Fitzroy, Victoria

(1) Measurement of Alcohol Intake and Blood Alcohol Concentrations. To clarify the existing uncertainty of the effect of food on blood alcohol concentrations. J. N. Santamaria. HRIS 52. IRRD 605857. ACTIVE

97. M.H. CAMERON AND ASSOCIATES: 17 Myrtle Grove, 3130, Blackburn, Victoria.

(1) Investigations of the Effectiveness of Australian Design Rules Numbers 2, 22A and 29. To determine the effectiveness of design rules for door latches and hinges, head restraints and side door strength; and to assess need for obtaining information on crash severity. M.H. Cameron. HRIS 53. IRRD 605858. ACTIVE

New Project

97. (2) Evaluation of Random Road Side Breath Alcohol Testing Legislation in Victoria. Breath alcohol levels will be determined by random testing during the first 6 months of legislation affecting DWI. The perceived risk of DWI will also be measured. M. Cameron, P. Strang, A. Vulcan. HRIS 52. IRRD 606972. (Citations) ACTIVE

98. HARRY STANTON AND ASSOCIATES: 23 Amsterdam Street, 3121 Richmond, Victoria.

(1) An Inventory of Exposure Data. To compile a national inventory of holdings of exposure data relating to road safety, that is the opportunity for involvement in an accident with various type roads users and vehicles. H. G. Stanton. HRIS 51. IRRD 605874. ACTIVE

99. GRIFFITH UNIVERSITY, SCHOOL OF AUSTRALIAN ENVIRONMENTAL STUDIES: 4111, Nathan Queensland.

(1) Evaluation of Queensland Defensive Driving Course. An evaluation of one such course and determinating the extent to which it reduces accident involvement among its participants, comparing those who took the course with those who had no instruction. P.W.A. Dayananda. HRIS 52. IRRD 605869. ACTIVE

100. B. & J. ELLIOTT AND ASSOCIATES: 176, The Esplanade, 3186 Brighton, Victoria.

(1) Development of Approaches to a Nationwide Drinking Driving Publicity Campaign. Study of the effectiveness of past and current efforts to influence road users not to combine drinking and driving, and develop alternate approaches for new programs. B.J. Elliott, J.R. Peberdy, A. J. Reark. HRIS 52. IRRD 605871. COMPLETE

101. AUSTRALIAN AERONAUTICAL RESEARCH LABORATORIES: 506 Lorimer Street, 3207 Fishermans Bend, Victoria.

(1) Weathering Tests on Protective Helmets Approved to Australian Standard As 1998 (For Vehicle Users). To test a range of helmet types by exposing them to outdoor weather for three years and subjecting them to impacts periodically. S. R. Sarrailhe. HRIS 34. IRRD 605870. (Citations) ACTIVE

102. OLYMPIC TYRE AND RUBBER CO. PTY. LTD.: 68 Cross Street, 3012 West Footscray, Victoria.

New Project

(1) Development of Energy-Saving Passenger Radial Ply Tires. To develop a passenger car radial tire with lower rolling resistance without sacrificing ride, durability and handling properties. K. Moore, A. Henry, P. Curror. HRIS 17. IRRD 605915. ACTIVE

103. TASMANIA TRANSPORT COMMISSION 1 Collins Street, 7000, Hobart, Tasmania, Australia.

New Projects

(1) Vehicle Defect and Accident Involvement. Vehicle defect rates and accident involvement rates for various vehicle categories are to be determined. R. Eaton. HRIS 53. IRRD 605920. ACTIVE

(2) Traffic Signal Optimization Program. To prepare a basic software program for the optimization of cycle plans for the Hobart area traffic signal co-ordination using the most suitable package. A. Peters. HRIS 12. IRRD 605921. ACTIVE

New Project

103. (3) Safety Effectiveness of Recent Traffic Management Measures in Tasmania. To evaluate the road safety effect of some of the traffic management measures recently implemented in Tasmania. T. Eaton. HRIS 51. IRRD 605922. ACTIVE

104. METROPOLITAN TRANSPORT TRUST. Tasmania 49, Macquarie Street 7000, Hobart, Tasmania, Australia.

New Project

(1) Bus Ridership Patterns. To establish basic patterns of bus ridership using different variables such as routes, time of day, day of week and type of ticket used. T. Maclurkin. HRIS 12. IRRD 605923. ACTIVE

105. ROYAL NORTH SHORE HOSPITAL OF SYDNEY, PACIFIC HIGHWAY, 2065, St. Leonards, New South Wales, Australia.

New Project

(1) Five Year Review of Spinal Cord Injuries Motor Cyclists. A five year review of spinal cord injuries in motorcyclists. Leads to a conclusion that there is an urgent need for a review of the standards for the design of the helmets worn by motorcyclists. J. Yeo, M. Griffiths. HRIS 51. IRRD 605924. (Citations) COMPLETE

106. BMI LIMITED, GREYSTANES ROAD, 2145, South Wentworthville, New South Wales, Australia.

(1) Use of Deuterically Altered Basic Igneous Rock of Marginal Soundness as Road Pavement Material. An investigation into the practical usability of altered dolerite rock which is important to the Sydney market because of the size and near proximity of the deposit. G. West, P. Clark, G. Rigozzi. HRIS 35. IRRD 606607. (Citations) ACTIVE

(2) Design and Evaluation of a Trial Pavement Section Under Heavy Loading Using Mechanically Modified Low Quality Road Base. A project designed to compare the performance of four pavement sections subjected to heavy wheel loading over a five year period. G. West, P. Clarke. HRIS 24. IRRD 606608. ACTIVE

107. DEAKIN UNIVERSITY, MECHANICAL ENGINEERING DIVISION: 3217 Geelong, Victoria Australia.

New Project

(1) Experimental Stress Analysis of Styled Steel Wheels. An investigation of the influence of the position and shape of the air vents in the discs of the "sports" type of steel wheels. R. Bathgate, K. Cosgriff. HRIS 53. IRRD 605925. ACTIVE

108. ROYAL MELBOURNE INSTITUTE OF TECHNOLOGY, 124 Latrobe Street, 3000, Melbourne, Victoria, Australia.

a. Department of Civil and Aeronautical Engineering: Same address.

New Project

(1) Interlocking Concrete Block Pavement Performance. To collect information on the functioning of an interlocking concrete pavement under load. K. Mavin. HRIS 24. IRRD 605926. (Citations) ACTIVE

108. b. Department of Mechanical and Production Engineering: Same address.

New Project

(1) Investigation of the Effect of Bullbars on Vehicle-Pedestrian Collision Dynamics. 20 tests have been made using medium and small sized cars fitted with bull-bars, driven at 20 Km/H and impacted against a pedestrian dummy. J. Thomas. HRIS 51. IRRD 606648. ACTIVE

109. ROYAL AUTOMOBILE CLUB OF VICTORIA, 123 Queen Street, 3000, Melbourne, Victoria, Australia

New Projects

(1) Bayside Corridor Travel Time Study (Melbourne). A study made to determine changes in travel patterns following the opening of the Westgate and the Johnson Street Bridges. G. Davis, J. McKenzie, J. Corrigan. HRIS 55. IRRD 606609. (Citations) COMPLETE

(2) An Evaluation of Traffic Signal Co-ordination in Melbourne Suburbs. To collect travel time data on all roads involved in the signal program and on all adjacent routes. J. McKenzie, J. Corrigan. HRIS 55. IRRD 606610. ACTIVE

(3) Observance of Traffic Signals. A survey to determine driver attitudes to amber and red cycle changes at signalized intersections and the corresponding frequency of injury and property damage involved with the varying attitudes. J. McKenzie, J. Corrigan. HRIS 52. IRRD 606611. (Citations) COMPLETE

110. SOUTH AUSTRALIA, POLICE DEPARTMENT ANGAS STREET: 5000, Adelaide, South Australia, Australia.

New Project

(1) Traffic Resource Deployment. To establish techniques for the deployment of each specific traffic resource to ensure it optimal utilization and that its achievements are quantified. J. Pilla. HRIS 54. IRRD 606621. ACTIVE

111. VICTORIA MINISTRY OF POLICE AND EMERGENCY SERVICES: SPRING STREET, 3000 Melbourne, Victoria, Australia.

New Project

(1) Drug Screening of Killed Drivers and Pedestrians. Body fluid samples from a one year sample of killed drivers and pedestrians (approximately 400 persons) are being tested for the presence of any of approximately fifty different drugs. J. Hendtlass. HRIS 52. IRRD 606649. ACTIVE

112. ENGINEERING DEVELOPMENT ESTABLISHMENT: Raleigh Road, 3032, Maribyrnong, Victoria, Australia.

New Project

(1) Evaluation of 4 Ton and 8 Ton Trucks for Use by the Australian Army. To assist in the army evaluation of trucks for future requirements by carrying out performance and reliability trials of a number of trucks. R. Power, R. Watkins. HRIS 53. IRRD 606682. ACTIVE

113. NORTHERN TERRITORY, DEPT. OF TRANSPORTATION AND WORKS: P.O. Box 2520, Darwin, Northern Territory, 5794.

(1) Northern Territory Roads; Width of Seal Investigation. To study factors affecting suitability as "development roads" of roads with 8m formation width and central 3.7m wide seal and derive inter-relationships between factors. Staff. HRIS 21. INACTIVE

113. (2) Computer Program for Northern Territory Roads. Review of computer programs for rural roads in flat terrains which use sparse survey data. HRIS 21. INACTIVE

114. METROPOLITAN TRANSIT AUTHORITY: 230 Brunswick Street, 4006
Fortitude Valley, Queensland.

New Project

(1) Public Transport Rationalization. A total needs study of public transport in the area with recommendations as to additions and changes needed to obtain optimum service. P. Turner, M. James, D. Yeo. HRIS 13. IRRD 606948. (Citations) COMPLETE

115. JOINT ROAD PLANNING GROUP: 500 Collins Street, 3000, Melbourne, Victoria.

New Project

(1) Outer Ring Study: Diamond Creek to Ringwood. A study of the various aspects of the Diamond Creek-Ringwood proposed location was studied with particular emphasis on environmental effects. R. Evans, D. Shrimpton. HRIS 12. IRRD 606949. (Citations) COMPLETE

AUSTRIA

Supplementary Survey - 1980

The 1980 survey of Austria was conducted under the IRRD program and lists 13 new projects, of which 6 are being reported as completed. Project reports were received by the IRF from the British Transport and Road Research Laboratory, the English documentation center for the IRRD.

3. ROAD SAFETY BOARD (Kuratorium fur Verkehrssicherheit): Olzeltgasse 3, 1030 Wien

a. Department of Traffic Psychology: Same address.

(37) Microprocessor Controlled Teaching Programme for Traffic Offenders. To determine information and attitude deficiencies in traffic offenders and treat these by means of a system of programmed learning based on the microprocessor. U. Heckl. HRIS 52. IRRD 702251. ACTIVE

(38) Development of a Universal Test Apparatus Based on Microprocessors for Carrying Out Psychological Driving Aptitude Diagnosis. To develop a problem orientated series of tests in accordance with the principles of mass testing. U. Heckl, K. Hoefner. HRIS 52. IRRD 702252. (Citations) ACTIVE

(39) Testing of a Tranquilizer on Two Different Groups of Patients, and Possible Effects on Driver Behavior. To administer a tranquilizer and a placebo to two differently diagnosed groups of patients and test the effects on driving ability. E. Klebel, U. Heckl. HRIS 52. IRRD 702253. ACTIVE

(40) Testing of Equipment for Measuring Decision and Reaction Time. To determine decision time in addition to the measured reaction time through use of the modified Vienna reaction measuring equipment. H. Michalke U. Heckl. HRIS 52. IRRD 702254. ACTIVE

(41) Communication in Road Traffic, Part 1. To study the literature and consult specialists on the development of meaningful forms of communication on the road which cannot be misinterpreted. R. Risser, K. Hoefner. HRIS 52. IRRD 702255. ACTIVE

(42) Testing of a Risk Questionnaire to Determine Readiness to Take Risks and Whether it Can Be Applied to the Diagnosis of Driving Aptitude. To conduct a detailed theoretical analysis of the Jackson Risk Taking Questionnaire which consists of 106 questions on physical, social, ethical and financial readiness to take risks. L. Schmidt, W. Schmetterer. HRIS 52. IRRD 702256. ACTIVE

b. Traffic Institute: A1031 Olzeltgasse 3, Wien

(30) Beginning of Journeys of Holidaymakers from Bavaria. To achieve a better staggering of holiday journeys with a view to reducing peak journey times at the weekend. P. Kudlicza, R. Fuehrer. HRIS 16. IRRD 702257. (Citations) COMPLETE

(31) Determination of Speeds and the Frequency of Belt Use on Austria's Roads. To determine the speeds at which various groups of drivers travelled and the percentage which used belts. H. Knoflacher, H. Lukaschek H. Peterschinegg. HRIS 55. IRRD 702258. (Citations) COMPLETE

(32) Forecast of Accident Risk Through the Erection of Tunnels. Proposals for Light Engineering Design and Safety. To examine safety aspects arising from the combination of merging sections and tunnel areas with attention to the design of junctions and lighting of the tunnel entrance area. H. Knoflacher, H. Lukaschek. HRIS 21. IRRD 702259. (Citations) COMPLETE

3. b. (33) Study of Accident Black Spots in Lower Austria for 1977 and 1978. To count accident black spots (10 or more accidents per year) plot their location and analyze the cause. H. Knoflacher. W. Bereza-Kudrycki. HRIS 51. IRRD 702260. (Citations) COMPLETE

(34) Measurements of Evenness on Federal Main Roads. To measure evenness on Federal main roads in Carinthia using the bump integrator method. H. Knoflacher. H. Lukaschek. HRIS 24. IRRD 702261. COMPLETE

e. Innsbruck Division: Adamgasse 3/5. A-6020. Innsbruck.

(3) Opinions on Traffic Surveillance. To interview 935 male and female drivers at petrol stations to determine their opinions of traffic surveillance and use of civilian patrols. M. Gheri. W. Magnet. HRIS 54. IRRD 702262. (Citations) COMPLETE

f. Steiermark Division: Neutorgasse 51. A-8010. Graz

(1) Instruction on Perception of Danger for Riders of Two-Wheelers. To develop a series of slides to be used to provide instruction on the perception of danger and for testing the driving ability of motorcyclists. A. Schuetzenhoefer. H. Bukovski. HRIS 52. IRRD 702263. ACTIVE

BELGIUM

Supplementary Survey - 1980

The 1980 survey of Belgium was conducted under the IRRD program. Eleven projects not previously reported are listed. Project reports were received by the IRF from the British Transport and Road Research Laboratory. the English language documentation center for the IRRD.

1. MINISTRY OF PUBLIC WORKS (Ministere des Travaux Publics): Rue de Geneve. 4 BP10 B-1140, Bruxelles. Brabant.

   a. Road Control and Research Department (Service de l'Infrastructure des Routes): Same address.

      (22) Contribution to the Study of Bituminous Surfacings Type 2 of Standard Specifications No. 150. To study the susceptibility to tracking of different asphaltic concrete mixtures of type 2 spread with precoated chippings. P. Van Coppenolle. G. Lefebyre. L. Kestemont. HRIS 31. IRRD 500911. ACTIVE

3. ROAD RESEARCH CENTER (Centre de Recherches Routiers): Boulevard de la Woluwe 42 1200 Bruxelles. Brabant

   f. Department of Design and Structures: Same address.

      (13) The Mechanical Behaviour of Highway Bridge Expansion Joints and Their Maintenance. To increase the lifetime of highway bridge expansion joints, reduce maintenance costs and facilitate an economical design of the joints as a function of the special stresses to which they are subjected. C. Clauwaert. HRIS 25. IRRD 500908. ACTIVE

   g. Department of Methods of Measurement: Same address.

      (9) Possibilities of Stabilizing Various Types of Residual Gypsum. To evaluate the possible beneficial changes in the characteristics and behavior of residual gypsum brought about by improvement and stabilization so that it can be used in road construction. A. Verhasselt. HRIS 34. IRRD 500906. ACTIVE

      (10) Laboratory Study of the Possibilities of Improving the Quality of Blast-Furnace Slag and Steel Plant Slag in Road Construction. To study the composition of iron slag from steel plants and the evolution in its intrinsic stability in hydration and carbonation. F. Choquet. HRIS 34. IRRD 500909. ACTIVE

      (11) Identification of the Nature and Intrinsic Adhesion Characteristics of Waterproofing Courses and Binders Used in Their Construction. To determine the physico-chemical and technological characteristics of basic and modified bituminous binders used in waterproofing courses. F. Choquet. HRIS 34. IRRD 500910. ACTIVE

   i. Department of Surfacings: Same address.

      (10) Design of Concrete Surfacing Joints and Their Maintenance. To assess the need of dowelling the transverse joints of concrete surfacings and measure the opening/closing of the joints, permanent differences in level, play in the slabs, variations in evenness, imperviousness and sealing durability under traffic. L. Hubrecht. HRIS 24. IRRD 500905. ACTIVE

      (11) Permeable Bituminous Mixtures. To study the different aspects of permeable bituminous mixtures to obtain non-deformable pavements without surface water. Y. Decoene. G. Van Heystraeten. HRIS 31. IRRD 500907. ACTIVE

10. S. A. GLAVERBEL, LABORATOIRE CENTRAL: Rue de l'Aurore 2, B-6040, Charleroi (Jumet) Hainaut

(13) Improvements in Thermal Quenching Techniques for Thin Glass. To study improvements in thermal quenching techniques for thin glass used in motor vehicles as a contribution to weight reduction. J. Bertiaux, Deliere. HRIS 53. IRRD 500898. ACTIVE

23. SCIENTIFIC AND TECHNICAL CENTER FOR CONSTRUCTION (Centre Scientifique et Technique de la Construction), Rue du Lombard 41, 1000 Bruxelles, Brabant

(27) Concrete Reinforced with Steel Fibres. To study cracking under flexural stress and impact and replacement of conventional shear action reinforcement with steel fibres. J. Venstermans. HRIS 24. IRRD 500912. ACTIVE

(28) Protection of Concrete Structures Against Gas Explosions. To study damping (absorbent) materials and conduct gas explosion tests in an experimental tunnel protected by sandwich structures. J. Venstermans, P. Van Biervliet. HRIS 21. IRRD 500913. ACTIVE

(29) Super Plasticizers. Study of the Precautions to be Taken During Concrete Laying. To test two plasticizers at different temperatures and different w/c ratios to study consistency, segregation, setting time, compressive strength and splitting strength. J. Venstermans. HRIS 34. IRRD 500914. ACTIVE

BRAZIL

Supplemental Survey - 1980

Edimilson Tavares Lemos

The 1980 Supplemental Survey of Brazil was reported by the Director, Instituto De Pesquisas Rodoviarias, and reports 145 projects for the first time.

2. NATIONAL HIGHWAY DEPARTMENT (Departmento Nacional de Estradas de Rodagem - DNER): Avenida Presidente Vargas, 522-Rio de Janeiro, R. J. 20.000

a. Road Research Institute (Instituto De Pesquisas Rodoviarias): Centro Rodoviario, Rodovia Presidente Dutra, KM 0,21.240-Rio De Janeiro, R. J.

(49) Soil Mixture and Aggregates Project. Discusses the need for using mixtures of materials to meet specification requirements, presents the theoretical foundations and provides a numerical illustration of the analytical method. S. Castro. HRIS 62. (Citations) ACTIVE

(50) Road Paving by Phases. Considers the Problem of Phase Paving. M. Souza. HRIS 24. (Citations) ACTIVE

(51) Highway Operation Costs for Economic Feasibility Studies. Operational costs as influenced by fleet composition, characteristics of the fleet vehicles, the conditions of the highways, and vehicle maintenance. F. Costa. HRIS 54. (Citations) ACTIVE

(52) Restoration Project for Flexible Pavements. Measurements of recoverable deformations of a flexible pavement provide a reliable basis for analyzing pavement condition as well as the possible causes of its deterioration. A. Mattos. HRIS 40. (Citations) ACTIVE

(53) Pavement Deflection Measurement. The work combines concepts, forms and monograms for the purpose of solving the prediction of pavement durability with respect to deflection and traffic. N. Aratangy, P. Adreatini. HRIS 33. (Citations) ACTIVE

(54) Effect of Saturation Moisture on the Support Capacity of Soil. A study evaluating the support capacity of saturated soil when the moisture compacting capacity is known. J. Mendes. HRIS 63. (Citations) ACTIVE

(55) Studies of Soil Stabilization with Lime. Analyzes the influence of lime on soil plasticity, the variations of volume by water absorption, granulometric, suction, density and hardness and aspects such as the time of cure. E. Castro. HRIS 64. (Citations) ACTIVE

(56) Aging of Asphalt During Mixture. The change that takes place in asphalt during the mixing operation in the factory was studied by the use of laboratory tests. J. Agnusdei. HRIS 34. (Citations) ACTIVE

(57) Use of Basalts in Road Paving. This work studies the possible causes of poor basalt behavior and suggests a procedure to determine the quality of these rocks and their use. A. Schneider, F. Rocha. HRIS 35. (Citations) ACTIVE

(58) Project Problems in the Specifications and the Construction of Flexible Pavements. The subjects covered in a conference with the Brazilian highway engineers in 1968 by Dr. W. J. Turnbull. HRIS 33. COMPLETE

(59) Structure Evaluation of Flexible Pavements. A theoretical study offering some practical and theoretical considerations on the subject. A. Mattos. HRIS 24. ACTIVE

2. a. (60) Regulation of Highway Corridors. To formulate a policy for regulating highway corridors. IPR Team. HRIS 12. ACTIVE

(61) Obtainment and Application of Hydrogen in Engines. To obtain hydrogen under an advantageous and economic form in conjunction with an electrolysis process. N. Maia. HRIS 17. ACTIVE

(62) Planning and Design of Test Track for Highway Traffic Engineering. The planning of an experimental structure for highway traffic engineering studies. IPR Team. HRIS 21. ACTIVE

(63) Research on Highway Costs - Pavement Studies. This paper presents the methodology for the studies dealing with pavement performance and maintenance, analyses conducted, equipment used for data collection, as well as models developed for forecasting the performance of paved roads as related to rutting, irregularities and fissures. C. Queiroz, F. Borralho, A. Visser, R. Moser. HRIS 24. ACTIVE

(64) Research on the Structural Evaluation of Flexible Pavements - Research Methodology. This research covers three areas, viz: seasonal variations of recoverable deflections, temperature influence on deflection measurements, and the reduction of deflections caused by resealing thickness. IPR/DNER. HRIS 24. ACTIVE

(65) Low Cost Pavements and Lateritic Soils. The benefits of using laterite soils in low-cost pavements is emphasized. Consultant. HRIS 24. ACTIVE

(66) Axle-Load Influence upon Highways. The problem of changes in the estimated remaining useful life of pavements due to changes in legal restrictions on allowable axial load and on gross weight of trucks is being studied. HRIS 24. ACTIVE

(67) MECPAV Project. Analysis of pavement behavior under loads and climatic factors. IPR team. HRIS 24. ACTIVE

(68) EQUIPERODO (Road Testing Equipment). To establish for non-destructive tests for pavements and soils. J. Medina, S. Sa, R. Barbosa. HRIS 24. ACTIVE

(69) Vibration Effects on Structures. To instrument and to observe the effects of explosives detonation on adjoining structures. as well as its interference in urban areas. L. Paula. N. Palm. SAAD. HRIS 25. ACTIVE

(70) Criteria for Receiving Bridge Elastomer Non-skidding Bearing Plates. Technological Aspects. Tests for technological quality control for lot acceptance of plates for use in the structure. I.IBRI. HRIS 25. ACTIVE

(71) Reinforcement and Widening of Highway Bridges. The economic advantages in reinforcing and widening highway bridges. A. Vieira. HRIS 25. ACTIVE

(72) Accelerated Tests for Forecasting Concrete Strength. The research is directed to the development of accelerated tests for concrete specifically using AF cement. L. Olivan. L. Bauer. HRIS 32. ACTIVE

(73) Construction Work Supervision by Consulting Firms. Some concepts and peculiarities on construction work supervision by consulting firms. J. Motta. HRIS 33. ACTIVE

(74) Anti-Dust Treatment for Soils Presenting Lateritic Characteristics. The anti-dust treatment in the case of good drainage on the area will probably last up to 6 years of traffic of 200 commercial vehicles per day. H. Santana. HRIS 34. ACTIVE

BRAZIL (contd)

2. a. (75) Aggregate Project. The study concerns the degredation or durability of mineral aggregates used in base layers and bituminous surfacings and points out quality tests that better represent the pavement behavior. IPR team. HRIS 35. ACTIVE

(76) Intensive Use of Man Power and Local Materials for Implementing and maintaining local roads. Guidance in order to find a technological alternative for rural understructure services. A. Santos P. Borges C. Moreno. HRIS 40. ACTIVE

(77) Delineators. A new symbolic delineator system has been developed. G. Ramalho. HRIS 54. ACTIVE

(78) Traffic Control and Guidance Along Construction Working Areas that are Being Marked with Thermoplastic Materials. Advocates the replacement of policemen serving with the highway patrol for operating the present system of traffic control and guidance while signing services are being performed by laborers working for a private contractor. Prismo Universal Team. HRIS 54. ACTIVE

(79) Laboratory Tests on Thermoplastic Materials to be Used for Markings. Forecast of Probable Behavior on the Roadway as a Function of Results Achieved. To enumerate and describe the tests needed for properly triplicating thermoplastic materials that are used in pavement markings and to list the laboratory instrumentation needed. Prismo Universal Team. HRIS 54. ACTIVE

(80) Signs Manufacture. To alert signing manufacturers towards recommended application characteristics. I. Santos HRIS 54. ACTIVE

(81) Materials Evaluation for Highway Markings. Deals with subjects that are not included in most specifications for highway marking materials. P. Brandão. HRIS 54. ACTIVE

(82) Portable Signing Devices for Traffic Research. Deals with the design and main specifications for portable signing devices. A. Oliveira. HRIS 54. ACTIVE

(83) Specifications for Barriers. Guardrails. Anti-Glare Devices and Traffic Separators. Deals with barriers that are a continuous protection system for highways. DNER Directorate. HRIS 54. ACTIVE

(84) Techniques for Using Vertical Signs Along Highways. To increase sign effectiveness, to minimize its maintenance requirements and to replace signs and delineators as required. S. Moraes. HRIS 54. ACTIVE

(85) A New Dimension for Highway Signing. Highway safety cannot be totally achieved until all attention is given to all factors that affect the system operation. B. Jardim. HRIS 54. ACTIVE

(86) Undisturbed Sampling of Soils while Making Soundings. The evolution of knowledge concerning undisturbed sampling. Summarized. E. Presa. HRIS 61. ACTIVE

(87) Laterite and Lateritic Soils and Other Problem Soils of The Tropics. Establishes new parameters for use in projects concerned with flexible pavements using laterite, lateritic soils and other problematic soils of the tropics. W. Morin. P. Todor. HRIS 63. ACTIVE

(88) Embankments over Compressible Soils. Study of two embankments constructed over undrained soft clay or other compressible soil and instrumented. IPR team. HRIS 63. ACTIVE

2. a. (89) Correlationship Test Between Rainy Conditions and Landslides in a Wet Tropical Environment. Hazard charts of 4-hazard ranges have been developed for the nine regions studied G. Guidicini O. Inasa. HRIS 63. ACTIVE

j. Second Federal District Highway Department (2o Distrito Rodoviaro Federal-DNER; Entroncamento, Km.O 66.000 Belém, Brazil.

(1) Hot Premixed Bituminous Laterite Pavement. The behavior of bituminous paving of airport landing strips, highways and streets using lateritic soil corrected with sand and hot premixed asphalt concrete according to DNER specifications. A. Tavares. HRIS 31. ACTIVE

5. HIGHWAY DEPARTMENT, STATE OF MINAS GERAIS (Departamento De Estradas De Rodagem De Minas Gerais): Avenue Dos Andradas, 1120, 30.000 Belo Horizonte, Minas Gerais.

(26) Technical Specifications. Presents studies relating to the degree of soil compactness, the stabilization of cohesive soils and the method of assigning dimensions of flexible pavements by the CBR. M. Der. HRIS 62. ACTIVE

(27) Comparison of Methods Being Used for Recovery of Flexible Pavements. Deals with reinforcement design (for pavement recovery), according to several methods being used. M. Ferreira, M. Zeminian, J. Dicker. HRIS 24. ACTIVE

(28) Graphic Study on the Stability of Direct Foundation Slopes Using Reinforced Concrete. Technical study on slopes stability and graphic evaluation of its gradient for highway implementation. P. Paione Netto. HRIS 62. ACTIVE

6. UNIVERSITY OF SAO PAULO (Universidade De Sao Paulo): Cidade Universitaria. Caixa Postal 7141, Sao Paulo, Sao Paulo

a. Technical Research Institute: Same address.

(37) Roads Project. A project study for the construction of a road containing pre-project studies, aerial photogramatic studies, etc. R. Campos. HRIS 61. ACTIVE

(38) Highway-Project. To show how a highway project is developed. De Senco. HRIS 61. ACTIVE

(39) Grading. A complete study of grading, studies of earth fill, types of sections, equipment, operation, evaluation of costs, types of excavations and surface and underground drainage. W. Senso. HRIS 41. ACTIVE

b. Engineering School of San Carlos: Avenue Dr. Carlos Botelho, 1465, Sao Paulo 13560.

(7) Mechanical Locomotion of the Automotive Vehicles. A study presenting text and standard forms for road and street planners and for vehicle designers. R. Schoeder. HRIS 53. (Citations) ACTIVE

(8) Considerations About Models of Modal Choice for Interurban Transportation. Presents hypotheses on which the theories for choice of modes are based and analyzes some aspects of the process. R. Corsini, M. Soria. HRIS 12. ACTIVE

6. b. (9) Pre-Determination of Fuel Consumption of Vehicles Equipped with Otto Cycle Engines. Presents a methodological proposal for the previous determination of the fuel consumption of vehicles equipped with Otto cycle engine. R. Schroeder, A. Ferraz. HRIS 17. ACTIVE

(10) Engine Components Corrosion When Contacted by Alcohol. To study several engine components that get in contact with alcohol. A. Guastaldi. HRIS 17. ACTIVE

(11) Development of a Hydrologic Simulation Model for Computing the Superficial Run-off in a Hydrographic Basin. The development of a simulation model to compute the superficial run-off in a hydrographic basin, approaching the problem from the hydraulic point of view, making use of finite differences, and using computer help. A. Rigmetto, M. Oliveira. HRIS 22. ACTIVE

(12) Some Considerations upon the Possibility for Using Laterite in the State of Maranhão as an Aggregate for Portland Cement Concrete. An analysis is made out of coarse aggregate through its gradation composition, Los Angeles abrasion test, specific gravity, apparent weight, etc. A. Sousa, A. Ferraz. HRIS 32. ACTIVE

(13) Soil Stabilization with Lime. A study on the soil-lime reactivity of certain soils prevailing in a given region. D. Lima A. Silveira. HRIS 62. ACTIVE

(14) Effect of Back Pressure Variation. Applied for the Saturation of Specimens, on the Shear Strength of Compacted Soils in Quick Consolidated Triaxial Tests. N. Gaioto, M. Calijuri. HRIS 63. ACTIVE

7. DEPARTMENT OF HIGHWAYS, SECRETARIAT OF TRANSPORT, STATE OF SÃO PAULO (Departamento De Estradas De Rodagem Secretaria Dos Transportes - Sao Paulo): Avenida Do Estado, 777, 01.000 Sao Paulo, Sao Paulo

(39) Experimental Application of Weedkillings for Control of Infesting Weeds in the Presidente Castelo Branco Highway. An experimental application of herbicides along a section of Castelo Branco highway which was followed up and evaluated after six months. L. Siqueira. HRIS 40. ACTIVE

(40) Stabilization with Chemicals. The utilization of available chemicals on pavements of low daily volume, low cost roads. V. Prieto, N. Namur, A. Angulo. HRIS 62. ACTIVE

8. UNIVERSITY OF PARANA, Engr. School

a. Hydraulics & Hydrology Studies. Research Center.

(2) AASHO Specifications for Mechanically Stabilized Soils. The work studies the stabilization of materials making up a layer of pavement, taking into account vertical displacement (settling), lateral and vertical displacement. A. Pereira. HRIS 33. ACTIVE

(3) Some Aspects and Trends in Granulometrical Stabilization. Methods for proportioning of mixtures and verification of the granulometrical stabilization possibilities of the soil. P. Aguiar. HRIS 64. ACTIVE

(4) Resolution of Continuous Beams. Calculation of structure with resolution of continuous beams of constant or variable moment of inertia, within straight or parabolic brackets, based on equation of three moments. J. Neto, I. Vieira, M. Inove, T. Inove. HRIS 25. ACTIVE

12. BAHIA STATE HIGHWAY DEPARTMENT (Departamento De Estradas De Rodagem De Bahia): Praca Padre Aspicuelta, Salvador, Bahia

a. Technical Research Section: Same address.

(14) Pits and Lateritic Soils (Bahia Recess). Evaluating the natural pits of materials that can be used in the area under study. J. Carvalho. HRIS 61. ACTIVE

15. FEDERAL UNIVERSITY OF RIO DE JANEIRO (Universidade Federal Do Rio De Janeiro-UFRJ): Cidade Universitaria, Rio De Janeiro, R.J. 21910.

a. Coordination of Graduate Engineering (Coordenancao Dos Programas De Pos-Graduacao De Engenharia-Coppe Da UFRJ): Same address.

(50) Information System for Transportation. Survey of information systems development in Brazil. F. Camino, M. Brochado. HRIS 11. ACTIVE

(51) Structural Analysis of Transportation Systems. Structural analysis of the system is made taking into consideration the sythesis of hierarchic control structures and using a geometric program. I. Zmetek, F. Camino. HRIS 12. ACTIVE

(52) Influence of Nitrogen Source Addition to the Mash on the Protein Content of the Residual Yeast in Ethanol Fermentation of Blackstrap Molasses. The addition of ammon sulphate or urea improves the protein content of the recovered yeast. M. Magalhães, M. Jairo, W. Borzan. HRIS 17. ACTIVE

(53) Location Theory. Location theory models were made through the development of algorithms that are computationally efficient. N. Maculan Filho, A. Gomes. HRIS 21. ACTIVE

(54) Pavement Researches. The MECPAV project is oriented towards dynamic tests for soils and pavement materials. J. Medina. HRIS 24. ACTIVE

(55) Pavement Evaluation using the Roughmeter. The roughmeter calibration as well as tests conducted in Brasília are reported. R. Barbosa. J. Areias Neto. HRIS 24. ACTIVE

(56) Measuring Temperatures During One Year at Coppe Experimental Panel. Thermo-electric pairs were applied at several depths and automatic readings were recorded during the whole year. L. Mota. HRIS 24. ACTIVE

(57) Traffic Engineering Services - Manual on Railroad - Highway Grade Crossings. Report prepared aiming towards improvement on traffic safety conditions. DENATRAN-IPR/DNER. COPPE/UFRJ. HRIS 51. ACTIVE

(58) Traffic Engineering Services - Manual on Pedestrian Safety. To determine the methodologies and minimum criteria to be used when dealing with devices for increasing pedestrians safety. Team. HRIS 51. ACTIVE

(59) Traffic Engineering Services - Manual on Narrow Bridges. To improve traffic safety at critical locations. Team effort. HRIS 51. ACTIVE

(60) Study on the Influence of an Option for Vehicles Exit from a Highway upon the Performance of the Traffic Flow. Study of the traffic flow behavior near a vehicles exit. I. Ulyssea Neto. HRIS 55. ACTIVE

15. c. Instituto De Geociencias: Same address.

(6) Interference Currents: Theoretical Aspects and Corrective Procedures. Interference currents are theoretically analyzed because metallic structures immersed in electrolytes are subjected to them. P. Correia. HRIS 23. ACTIVE

(7) Atmospheric Corrosion Program Developed at CENPES. Corrosion rates are being studied through a direct in situ material exposure to the atmosphere. R. Viana. HRIS 23. ACTIVE

(8) Batch and Continuous Processing of Amylaceous Material for Ethanol Production. Main steps taken in Ethanol production using amylaceous raw materials are discussed. G. Silva. HRIS 17. ACTIVE

17. PONTIFICAL CATHOLIC UNIVERSITY (Pontificia Universidade Catolica-PUC): Rua Marques De Sao Vicente, 225-Gavea, Rio De Janeiro, R.J. 22451.

(16) Total Energy and Fuel Consumption in Urban Traffic. Introduces a model for the fuel consumption of a vehicle in a flow of urban traffic obtained by summating consumption for all vehicles in that flow of traffic. L. Gomes. HRIS 16. ACTIVE

(17) The Decision-Making Process and Factors of Major Influence in the Modal Split: Application on the Trips Nova Iguaçú Rio De Janeiro. To identify the principal restraints at the choice of a transportation mode by residents of the fringe area of Rio De Janeiro to the core area. R. Lisboa, W. Pereira, L. Autran. HRIS 13. ACTIVE

(18) Models of Demand and Supply in Transportation. Study of Modal Split Models. L. Autran, A. Gomes. HRIS 12. ACTIVE

(19) Differences Between Traffic Assignments According to the Criteria Employed (Standard and Descriptive). Standard assignments minimize the system time; the descriptive assignment minimizes users time. M. Florian, L. Lopes. HRIS 12. ACTIVE

(20) Total Energy and Fuel Consumption in Urban Traffic. Presents a model for fuel consumption by a vehicle moving along an urban traffic stream through the summation of number of vehicles, the ratio of total fuel consumption, as well as itineraries followed, operational costs and vehicles fleet. L. Gomes. HRIS 17. ACTIVE

(21) Support Capacity and Settlements on Residual Soils. Measurements to be made involving building settlements on residual soils, load tests to be conducted; penetration tests (cone); correlationship between values obtained from cone tests and those obtained from resistance and elasticity parameters. P. Rocha Filho, C. Romanel, I. Castro. HRIS 63. ACTIVE

(22) Application of the Darcy or Forchheimer Law. An analysis made of the undimensional results of the discharge and loss of heat estimated according to Darcy and Forchheimer Law. F. Theophilo Ottoni. HRIS 90. ACTIVE

(23) Demand-Performance Equilibrium for Allocation of Parking Vacancies. A model is presented for optimum allocation of parking vacancies. L. Gomes. HRIS 12. ACTIVE

20. STUDY GROUP FOR INTEGRATION OF TRANSPORT POLICY (GEIPOT: SCS-ED SOFIA-3^0 Floor, Brasilia, 7000

(11) Transportation and Production. This work seeks a mathematical model for analyzing the effects of improvements in the transportation system on increased production. E. Resende. HRIS 16. (Citations) ACTIVE

25. DEPARTAMENTO AUTONOMO DESESTRADAS DE RODAGEM DO RIO GRANDE DO SUL· Avenue Borges De Medeiros, 1555, Port Alegre, Rio Grande Do Sul

(17) Instructions for Vegetation Signing Along State Highways. New instructions that the panoramic view of the highways shall be a new one making trips more pleasant and be one attracting tourists attention. Staff. HRIS 23. ACTIVE

26. BRAZILIAN PORTLAND CEMENT ASSOCIATION (Associacao Brazileira De Cimento Portland): Av. Torres De Oliveira, 76 Sao Paulo 5347, Sao Paulo, Brazil

(10) Measurement of Concrete Pavement. Deals with general matters relating to concrete paving projects as based on the experiences encountered by the Brazilian Portland Cement Association. F. Basilio. HRIS 32. ACTIVE

(11) Mix Design of Soil Improved with Cement by Physical-Chemical and Mechanical Verification of the Original Soil. To determine the soils behavior through time when cement is added to it as related to changes that occur with physical limits, fines degredation and penetration resistance. M. Pitta. HRIS 62. ACTIVE

(12) Soil-Cement Retraction. Survey of factors that have some influence on the soil-cement retraction for several types of soil with the purpose of avoiding or reducing the cracks, particularly in soil-cement bases. M. Pitta. HRIS 62 ACTIVE

(13) Permeability of Soil-Cement. To determine permeability in soil improved with cement and soil-cement, aiming at their use in pavements, dwellings and in dam coatings. M. Pitta. HRIS 62. ACTIVE

(14) Influence of Several Types and Classes of Cement in the Settlement of Requirements for Soil Cement. Study of the possibility of a rationalization of present norms of soil cement in view of the diversification of cement into types and classes. M. Pitta. HRIS 62. ACTIVE

28. HIGHWAY DEPARTMENT, STATE OF PARANA (Departamento De Estradas De Rodagem Do Parana: Avenue IGUAKU 420, Curitiba 80000, Parana.

(10) Highway Investment. Takes into account the current state of development and profitability of investments, so that once these data are obtained decisions can be made regarding the building of the road. E. Resende. HRIS 15. ACTIVE

(11) Evaluation of the Performance of Low Cost Pavements. Development of a systematic means of monitoring the performance of low cost pavements to determine the parameters indicating structural utility. A. Hein, L. Aronovich. HRIS 24. ACTIVE

31. FEDERAL UNIVERSITY OF BAHIA (Universidada Federal Da Bahia): Rua Aristides Novis, 2, 40.000 Salvador, Bahia.

(9) Influence of Transverse Distension upon Deformations on the Foundation Ground. Analyzed for the general base of tilted and eccentric loads, associating the ground to a boussinesq Semi-space. E. Presa. HRIS 63. ACTIVE

35. MILITARY INSTITUTE OF ENGINEERING (Instituto Militar De Engenharia):
Praca General Tiburcio, Praia Vermelha, Rio De Janeiro, R. J. 22290.

(23) Technical Financial Analysis of Types of Buses and the Best Dimensions of Vehicles. To study, under the aspects of capacity and operation costs mass transit vehicles presently existent in the market. W. Pereira, A. Braun, D. Rosa Filho. HRIS 53. ACTIVE

(24) Analytic and Conceptual Considerations about Mathematical Models of Traffic Distribution. Presents some considerations on the use of a mathematical model for trips distribution. J. Souza, K. Leibrand. HRIS 54. ACTIVE

(25) Economic Comparison Between Railway and Highway Transportation. Presents an analysis of evaluation methodologies involving the technical choices of evaluation, structures and methods for analysis, as well as economic evaluation through both costs and efficiency. J. Costa, J. Waisman. HRIS 12. ACTIVE

(26) Intermodal Coordination of Alcohol Transportation. Deals with the use of transportation modes for hauling alcohol to be used as fuel for automotive vehicles as well as for stationary engines. P. Mello, J. Gosta, A. Santon. HRIS 12. ACTIVE

(27) Basis for the Brazilian System for Technological and Scientific Transport Research. Focuses on the policy that prescribes the establishment in Brazil of both scientific and technological bases. T. Ribeiro, Leuzinger. HRIS 12. ACTIVE

(28) Cost Composition of Collector Trains. Observations of production factors in transportation, their interrelations and variations along the transportation generation. A. Braun, F. Vasconcelos. HRIS 15. ACTIVE

(29) A Contribution to the study of Locating Intermediate Facilities within a Transportation Network. To determine potential centers for locating intermediate facilities based upon accessibility indexes for a transportation network. L. G. Carvalho. HRIS 12. ACTIVE

(30) Vicinal Roads: Procedures for Evaluating Needs. A procedure was found for evaluating vicinal road needs through a mathematical model. W. Braga, K. Leibrand. HRIS 15. ACTIVE

(31) Optimization of Transportation. For a new economic border: the case of "Cerrado." Makes demographic studies of the area, it characteristics and economical importance. Consultant. HRIS 12. ACTIVE

(32) Harbor Congestion on the Competiveness of Brazilian Exports - The Case of Paranaguá. The study presents the costs due to ship congestion in the harbor which are reflected as an additive cost in the selling prices of Brazilian produce sold in the international market. T. Duran, J. Nogueira, J. Miranda. HRIS 15. ACTIVE

46. DEPARTMENT OF HIGHWAYS, STATE OF PARAIBA (Departamento De Estradas De Rodagem Da Paraiba): 58.000 Joao Pessoa, Paraiba

(2) Relationship Between Some Intrinsic and Engineering Properties of Organic Clay in Recife. The existent organic material content seems to be the most sensible parameter for indicating any strength changes. J. Cabrera, J. Queiroz, B. Valdes. HRIS 63. ACTIVE

51. MINISTERIO DA AERONAUTICSA, SERVICO DE ENGENHARIA: Rio De Janeiro, 20000, R. J.

(2) Lateritic Soil As Aggregate for Hot Premixed Bituminous Paving. To transmit the experiments that have been conducted since 1971, and are still going on, for using laterite as aggregate for hot mixed bituminous paving. H. Corletti. HRIS 31. ACTIVE

53. ETEL S/A BR-116, KM-398, CURITIBA 80000 Parana

(3) An Attempt for Fitting DNER Pavement Design Equations into Pavement Overlay Design. To present a procedure that can be adopted in pavement overlay design for computing additional thicknesses, based upon design equations for the flexible pavements. S. Teixeira. HRIS 24. ACTIVE

(4) Flood Rate Analytical Determination of Flow Based Upon Snyder's Synthetic Unitary Hydrogram. A simplified method is presented for computing flood rates using as a basis the Snyder's synthetic unitary hydrogram. F. Hoflus, R. Vaine. HRIS 22. ACTIVE

(5) Use of Side Ditches Along Highways as an Alternative for Roadway Drainage. An alternative for underground and surface drainage along highway deep cuts is presented. R. Vaine. HRIS 22. ACTIVE

(6) Design of Surface Drainage and Erosion Control Devices along Highways. Certain devices such as surface drainage, energy dissipators, slope benches as well as a tentative design for fighting existent erosions also are presented. R. Vaine. HRIS 22. ACTIVE

(7) Highway Surface Drainage. One theoretical development, together with some examples for its use are presented for solving problems. R. Vaine. HRIS 22. ACTIVE

57. FUNDACAO UNIVERSITARIA ESTADUAL DE MARINGA: Avenue Colombo 3690, Maringa 87100 Parana

(2) Fluid Dynamics of the Liquefaction of Coal in a Fluidized Triphasic Bed. Determination of fluid dynamic parameters in the process of liquefying coal in a fluidized triphasic bed, in connection with the continuous reactor project. F. Moraes, J. Spolador. HRIS 17. ACTIVE

(3) The Role of Transportation in the Economy. Shows transportation as a means of economic analysis and as a development factor of a region. A. Dergint. HRIS 15. (Citations)

62. COPAVEL CONSULTORIA DE ENGENHARIA S.A. Rua Conselheiro Clegário 30 - Maracanã 20271 Rio De Janeiro, Brazil

(1) Amount of Transported Cargo and its Application on Rigid and Flexible Paving Design. For the perfect design of a rigid or flexible pavement it is necessary to know also the existing axle-load distribution along nearby highways that are inter-connected to each section under study. J. Guerra, A. Corbeia, R. Carnavale, S. Almeida. HRIS 24. ACTIVE

(2) Suggestions for a Manual on Geological/Geotechnical Conventions. The present work is an attempt to standardize all conventions and its correspondent drawings that will be used for presenting geological/geotechnical maps. H. Penha, P. Faria, M. Fernandes, A. Goncalves. HRIS 61. ACTIVE

63. COMPANHIA DE ENGENHARIA DE TRAFEGO AV. DAS NACOES UNIDAS. 7163 05477
São Paulo, Brasil

(1) Airphoto Research on Urban Traffic. Presents special research techniques for collecting information related to urban traffic and using airphoto as its basic instrumentation. F. Castro. HRIS 12. ACTIVE

64. FACULDADE DE TECNOLOGIA UNIVERSIDADE DE BRASILIA-Campus Univ.
70910 Brasilia, Distrito Federal Brasil.

(1) Red Clay in Brasilia Soils. To survey empirical correlations between strength parameters of the federal district red clays and the number of strokes in the SPT sounding (N_{spt}). P. Murrieta. D. Berberian. HRIS 61. ACTIVE

65. W.J. BRITTO CONSULTORIA TECNICA-LTD. 65.000 São Luiz Brazil.

(1) The Use of Pisolitic Laterite as a Natural Aggregate for Paving BR-135/MA Highway. There is a pressing need in studying formulas for the use of laterite as a source of raw material for bituminous surfacing, because it is an abounding material existent in the region. W. Britto. HRIS 35. ACTIVE

66. MARANHAO ENGINEERING SCHOOL. 65.000 São Luiz MA. Brazil.

(1) Lime Stabilization of a Lateritic Soil. Deals with the effects of lime upon the properties of a lateritic soil found on the Island of São Luiz. J. Ferro. HRIS 62. ACTIVE

67. DEPARTMENTO DE ASSISTENCIA A MEDIA E PEQUENA INDUSTRIA Av. Nilo
Pecanha, 50. GR 2610 20020 Rio De Janeiro. R. J. Brazil.

(1) Handbook of Carbureted Alcohol. Technological features of the use of both anhydrous ethylic alcohol mixed with gasoline and hydrated alcohol. J. Moraes. HRIS 17. ACTIVE

68. CONSELHO NATIONAL DE DESENVOLVIMENTO CIENTIFICO E TECNOLÓGICO
CIDADE UNIVERSITARIA-ILHA DO FUNDAO-C. POSTAL 1191 21910 Rio De Janeiro
R. J. Brasil

(1) Production of Cellulase. An analysis based on the surface response methodology culture medium saline nutrients optimization. M. Hauly. R. Silva, C. Rao. HRIS 17. ACTIVE

69. MINISTRY OF JUSTICE ESPLANADA DOS MINISTERION 70.000 Brasilia. DF. Brasil

(1) Traffic Engineering Services Signals Manual. An analysis is made on highway capacity, the influence of parking and special traffic behavior. Staff. HRIS 54. ACTIVE

70. ENGENHARIA E PESQUISAS TECHNOLOGICAS S. A.

(1) Cement Macadam for Restoration of Concrete Pavements. The use of inadequate procedures due to lack of resources and due to need of keeping the traffic flowing. N. Schreiner. D. Cunha. HRIS 24. ACTIVE

71. UNIVERSIDADE FEDERAL DE VICOSA. 36570 Vicosa. Minas Gerais.

(1) Biomass Project. An attempt to develop a continuous system of fermentation of the raw materials used and distillation by means of more actual practices. C. Batista. N. Coelho. F. Teles. HRIS 17. ACTIVE

(2) Dual Fueling Diesel Engine with Carbureted Alcohol. To determine if the addition of a carburetor to the admission system of air combustion in a diesel engine would become a practical method for making possible at least a partial use of alcohol for fueling a diesel engine. J. Cruz. HRIS 17. ACTIVE

BRAZIL (contd)

72. AERONAUTICS TECHNOLOGICAL INSTITUTE 12200 São José Dos Campos. São Paulo. Brazil

(1) Determination of the Concentration of Some Gaseous Pollutents in the City of São José Dos Campos. Results show that even the peaks of maximum concentration are lower than the recommended values as air quality standard. B. Viera. F. Rebello. HRIS 17.

(2) Simulation in Urban Traffic, A Simple Crossing. The goal of this work is to make a simulation study applied to urban traffic. C. Barboza. HRIS 12. ACTIVE

(3) Application of a Linear Program and a Simulation Model in the Study of a Highway Network Problem. The research intends to demonstrate the applicability of a linear program in solving a highway network problem. M. Burd. HRIS 12. ACTIVE

73. NATIONAL INSTITUTE OF TECHNOLOGY Av. Venezuela. 82 Rio De Janeiro 20081, Rio de Janeiro.

(1) A Study of New Brazilian Vegetable Oils as Total or Partial Replacement. for Diesel Oil. The present deals with vegetal oils and respective brans obtained from oiled seeds not industrialized so far. T. Oniga A. Barreto. HRIS 17. ACTIVE

(2) Ethanol Technological Program: Manioc. Sorghum and Sweet Potato. The objective is to develop the technology of Ethanol production from renewable raw materials thus assuring the meeting of the goals of the national alcohol program. N. Araujo. HRIS 17. ACTIVE

(3) Ethylic Alcohol Production from the MESOCARP of the "BABACU" Nut. Successful results have allowed studies of plants with production ranges of 5,000 to 60,000 litres per day. F. Rosenthal. L. Epindola. S. Silva. HRIS 17. ACTIVE

(4) Production of Fungus Biomass from Stillage. The fungus biomass production is presented as a process associated with "VIHHOTO" treatment. and is a low cost process resulting in a good protein output and presenting an aminoacid composition similar to soya bran. N. Araujo. A. Visconti. H. Castro. H. Silva. HRIS 17. ACTIVE

(5) Surghum-A Raw Material for Ethanol Production. Saccharine Surghum is a strong competitor among materials to be used as a renewable source of raw material for Ethanol production. N. Araujo. H. Castro A. Visconti. HRIS 17. ACTIVE

(6) Alcohol as an Industrial Fuel in Brazil. The author presents a thermodynamics study comparing the engines efficiency whether using hydrated alcohol or gasoline. E. Costa. HRIS 17. ACTIVE

(7) Brazilian Vegetable Oils as Fuel and Lubricants. To gather information that would permit a diagnosis of the technical feasibility for finding out natural renewable products as substitutes for raw materials and basic imputs of fossil origin as a supplement contribution to the national alcohol program. H. Sa Filho. B. Rotemberg. S. Albuquerque M. Mendonca. HRIS 17. ACTIVE

(8) The Use of Sweet Potato for Ethanol Production. The sweet potato represents a raw material capable of contributing significantly towards the needed production of Ethanol in Brazil. N. Araujo. H. Castro J. Leal. M. Salles Filho. HRIS 17. ACTIVE

74. MINISTERIO DA AERONAUTICA (CTA-IRD-PMO) CENTRO DE TECNOLOGIA DE AERONAUTICA
12200 São José Dos Campos São Paulo, Brasil.

(1) Research for Brazilian Vegetal Oils Suited as Possible Substitutes of Diesel Oil. A search for a domestic fuel, of vegetal origin as a substitute for diesel oil. U. Stumpf, F. Saád. HRIS 17. ACTIVE

(2) Research on the Use of Ethyl Alcohol as a Substitute for Hydrocarbonous Fuels (Gasoline). Quest for a Brazilian fuel to substitute for petroleum derived fuels. U. Stumpf, F. Saad. HRIS 17. ACTIVE

75. INSTITUTO DE PESQUISAS E APERFEICOAMENTO INDUSTRIAL Av. Dr. Carlos Botelho
13560 São Carlos, São Paulo, Brasil.

(1) Engines using Hydrated Ethyl Alcohol. Research is just now beginning for the use of alcohol plus additives in diesel engines. R. Corsini, J. Tores. HRIS 17. ACTIVE

76. CETEC-CENTRO DE TECNOLOGIA DE MINAS GERAIS Av. Cândido Silveira, 2000
30000 Belo Horizonte Minas Gerais, Brazil

(1) New Process for Wood Carbonization including Byproducts Utilization. Design of a new masonry furnace for making use of condensable and noncondensable by-products as well as metallurgical coal. A. Vivacqua Filho, M. Almèida, J. Baptista. HRIS 17. ACTIVE

(2) Solubility of Natural Phosphates with "VINHOTO". Vinhoto has been used as a solvent to natural phosphate thus producing a byproduct fertilizer. A. Vivacqua Filho, P. Silva. HRIS 17. ACTIVE

(3) BABACU Tar for Paving. The research deals with the carbonization and distillation of Babacu nut. A. Vivacqua Filho, P. Agnelo, P. Almeida. HRIS 34. ACTIVE

77. UNIVERSIDADE CATOLICA DE PERNAMBUCO - UNICAP. Rua Do Príncipe, 526
50000 Recife, Pernambuco, Brazil

(1) A Study on Piles Buckling. In this study of piles buckling, the soil lateral restraint due to the effect of passive thrust is considered. I. Costa HRIS 25. ACTIVE

78. 1 GRUPAMENTO DE ENGENHARIA DE CONSTRUCAO-1 GEC 58000 João Pessoa Paraiba
Brazil.

(1) Pavement Sections Involved in Membranes - Concepts and Experiences. A new technique developed for using natural clay in pavement layers designed for bus terminals and airports. A. Pereira. HRIS 62. ACTIVE

79. M.T. SERVICO E DOCUMENTACAO-CIA BRAS DE A. GRAF RUA RIACHUELO 128
20.000 Rio De Janeiro, Rio De Janeiro, BR.

(1) Transportation Integration and Development. It studies transportation problems putting increased emphasis on the influence of economics. M. Graciano. HRIS 15. ACTIVE

CHILE

Resurvey - 1980

Luis E. Alvarez

The 1980 resurvey of Chile was conducted by Ing. Luis E. Alvarez, who reported 40 projects, 14 for the first time. Nine projects are shown to be completed.

The following includes projects previously reported to the IRF which have not been subsequently reported as COMPLETE, SUPERSEDED or ABANDONED.

1. MINISTRY OF PUBLIC WORKS (Ministerio de Obras Públicas) Morandé 71, Santiago

   c. Highway Department-Planning Section (Direccion de Vialidad-Seccion Planificacion) Same address.

      (2) Repair and Reposition Program for Bridges of the Regional Highway Network. To analyze sufficiency of existing bridges, recommend corrective measures and establish investment program for repair or reconstruction. E. Bollman, J. Buguna, N. San Martin. HRIS 25. ACTIVE

      (3) Road Surface Rehabilitation Program. Study of soils, bases and surfacing damages, possible causes, and prepare rehabilitation program. E. Bollman, D. Weiss, C. Belmar. HRIS 40. COMPLETE

2. UNIVERSITY OF CHILE, FACULTY OF PHYSICAL SCIENCES AND MATHEMATICS (Universidad de Chile, Facultad de Ciencias Físicas y Matemáticas): Avenida Beauchef 850, Casilla 2777, Santiago.

   a. Institute of Research and Materials Testing (IDIEM): Plaza Ercilla 883, Casilla Correos, 1420 Santiago.

      (43) A Methodology for Settlement Control in Structures. Study of a methodology based upon high precision optical grading to compile data on load-deformation behavior in three types of soils and compare theoretical estimates to actual settlement. M. Poblete, P. Caiozzi, A. Scholz, R. Salgado. HRIS 62. (Citations) COMPLETE

      (47) Effect of Fill Compaction on Thrust over Retaining Elements. Theoretical-experimental survey to estimate induced pressures by compacted fills over retaining structures. Rigid and flexible structures are analyzed. P. Ortigosa. HRIS 62. COMPLETE

      (48) Stability of Vertical Cuttings of Finite Length. Safety factors for vertical cuttings of finite length with restrictions of null deformation in its extremities are determined, by using a tridimensional finite elements program and comparison of results with field observations. P. Ortigosa, M. Astroza. HRIS 63. ACTIVE

      (50) Utilization of Aphydrite in Civil Works. Studies of the ways in which this material can be utilized in the production of pastes, mortars, pavements, and building construction. E. Retamal and others. HRIS 35. (Citations) ACTIVE

New Projects

      (51) Dune Sands with Binding Additives for Pavement Bases. A study seeking the economic utilization of dune sands in their natural condition or as mixed with cement, lime, cinders or as mixed with salt(s). M. Poblete. HRIS 35. ACTIVE

      (52) Soil Stabilization Through the Use of Salt (Na Cl). A survey of tests for appraising the optimal percentage of salt for road stabilization. P. Ortigosa. HRIS 62. ACTIVE

2. a. (53) An Equivalent Bidimensional Analysis of Slope Stability Problems. To propose ideas to permit the analysis of the problem by E.B.A. means. P. Acevedo, A. Karzulovic. HRIS 63. COMPLETE

(54) Slopes Stability in the Gravel of Santiago. To determine angles of slope accordingly to the height to be excavated in order to avoid damage to adjacent structures. H. Musante, P. Cesani. HRIS 63. ACTIVE

b. Department of Geophysics Blanco Encalada 2085, Casilla 2777. Santiago.

(4) Geophysical Methods in Civil Engineering. Application of such methods as seismic, gravimetric, electrical and magnetic to problems in bridge foundations tunnels, etc. M. Dragicevic, G. Behn, M. Araneda. HRIS 61. (Citations) ACTIVE

(5) Geophysical Methods in Civil Engineering. Study of the application of these methods to such problems as bridge foundations, tunnels, including the use of seismic, gravimetric, electrical and magnetic methods. M. Araneda M. Dragicevic, M. Avendano. HRIS 61. (Citations) ACTIVE

(6) Geophysical Methods in Civil Engineering. Geophysical methods are applied in civil engineering problems like bridge foundations, tunnel construction, etc. Seismic, gravimetric, electric and magnetic methods are commonly used. M. Araneda, M. Avendano. HRIS 61. (Citations) ACTIVE

New Project

(7) Geophysical Methods in Civil Engineering. The application of seismic gravimetric and electric methods to civil engineering problems. M. Araneda M. Avendaño. HRIS 61. ACTIVE

d. Transportation Engineering Section, Department of Civil Works: Casilla 5373, Santiago.

(3) Computational System for Transportation Problems. To generate a system of computation programs covering flow in networks, time series, surveys and sampling in the field of transportation engineering. J. F. Chernilo, S. Ganzalez T. T. Galvez P., S. Jara D. HRIS 11. (Citations) ACTIVE

(4) Simulation Models in Urban Transportation. To compile different models using LOGIT, PROBIT and DISCRIMINANT methods. J. Guendelman B., A. Escobar A. F. Escobar A., L. Mazela Q., E. Perez R., P. Valle L. HRIS 13. (Citations) ACTIVE

(5) Methodological Aspects in the Evaluation of Transportation Projects. Critical analysis of transportation projects evaluation methodologies which have been used in Chile and the comparison of forecasts made in previous surveys with actual data. S. González, S. Jara, T. Gálvez. HRIS 12. ACTIVE

(6) Theoretical and Conceptual Fundamentals of Transportation Engineering. A theoretical and conceptual frame for Transportation Engineering will be established to integrate the various scattered elements into a unique aspect for research and teaching purposes. T. Gálvez, S. Jara S. González, J. Chernilo. HRIS 11. (Citations) ACTIVE

(7) Computational System for Transportation Problems. Generation of computational program system capable to solve various transportation engineering problems which covers the areas of flows in networks time series interviews and sampling. J. Chernilo, S. González, T. Gálvez, S. Jara. HRIS 55. (Citations) ACTIVE

New Projects

2. d. (8) General Considerations on Special and Non-traditional Transport Modes. It intends to identify and to define ranges, capabilities and limitations of non-traditional transport modes, such as winches, cranes, scrapers, hoists and elevators, skips, funiculars, etc. C. Arrizaga. HRIS 12. ACTIVE

(9) Simulation Models in Urban Transportation. Compiling of various transportation simulation models on generation, distribution, modal split and assignment. Generalized costs are analyzed by Logit, Probit and discriminant methods. J. Guendelman, A. Escobar, F. Escobar, L. Mazuela, E. Pérez, P. Valle. HRIS 12. (Citations) ACTIVE

(10) Development of Transportation Modes in Chile. A historical analysis on the development of transportation modes in Chile. A guide for long term planning and for overall understanding of relationships between transportation systems and national development. C. Arrizaga, J. Chernilo, T. Gálvez, S. González, S. Jara. HRIS 12. (Citations) ACTIVE

New Projects

(11) An Alternative of Sea Transportation for the Development of the Coast Area. A proposed transportation system to serve isolated coastal regions. C. Arrizaga. HRIS 12. ACTIVE

(12) Simulation on the Behavior of Cyclic Transportation Systems with Random Demands. A study of control logics and its application to more complex systems. T. Gálvez, J. Guerrero, P. García. HRIS 12. ACTIVE

(13) A Regional Transportation Model to Evaluate Road Projects. To establish a computational system to forecast flow reassignments in construction projects and appraise costs. S. González, T. Gálvez. HRIS 12. ACTIVE

(14) Trip Generation Rates in Santiago. Analysis of trip generation economic factors and level of service. J. Gibson. HRIS 15. ACTIVE

(15) Costs of Vehicle Operations on Roads. Estimation of costs of vehicle operations due to intangible factors. T. Gálvez, J. Cortés, A. DeLa Carrera. HRIS 16. ACTIVE

(16) Traffic Signal Coordination. Optimization of Santiago signal network using transyt system. J. Gibson. HRIS 54. ACTIVE

e. Geotechnical Division, Department of Civil Works: Av. Blanco Encalada, 4° Piso Santiago

(1) Geotechnical Surveys in Relation to Road Works. Solutions are proposed for slope stability erosion, settlements and drainage problems in highway engineering projects, taking into account geomorphological, geotechnical and seismic considerations. P. Talloni, J. Urquidi, O. Orozco. HRIS 61. (Citations) ACTIVE

3. CATHOLIC UNIVERSITY OF CHILE (Universidad Católica de Chile): Nueva de Lyon, Casilla 114-D, Santiago

b. Transportation Engineering Department (Departamento Ingeniería de Transporte): Casilla 114-D, School of Civil Engineering (Escuela de Ingeniería), 16002, Santiago.

(7) Traffic Engineering. To update the practice of traffic engineering in Chile and develop the tools necessary. J. E. Coeymans, J.D. Ortuzar, G. Garcia, J. Garnham, L.G. Willumsen, L.E. Herrera. HRIS 54. (Citations) ACTIVE

(10) Public Transport Analysis. Based on analysis of information on public transport planning, prepare short and long range measures to implement and improve public transport in Santiago. J. Diaz, J. de Cea, J.D. Ortuzar, J.E. Coeymans, H. Gomez, M. Quezada, G. Cabreram, J. Legarretam, F. Pizzarro, A. Izquierdo, L.A. Silva. HRIS 12. (Citations) COMPLETE

New Projects

3. b. (13) An Urban Transport Planning Game. Development of a game that will simulate an hypothetical city to train planning personnel in analyzing urban transport problems. J. D. Ortuzar, L.G. Willumsen. HRIS 12. (Citations) ACTIVE

(14) Airships. Study of airships as a means of transport for developing countries. and to propose a design for freight transport service. J.E. Fernandez. F. J. Correa, S. Dittborn. HRIS 13. (Citations) COMPLETE

(16) Public Transportation Reorganization for the Greater Santiago. An analysis of existing conditions and an evaluation of alternatives for systems and equipment. J. de Cea Ch., J. Diaz F., J.E. Coeymans A., G. Garcia S., M. Quezada Q. HRIS 12. COMPLETE

(17) Bus Route Network Design. An attempt to develop and compare algorithms for solving the optimum bus route network problem. To assign an optimal route frequency. J. Dfaz F. HRIS 11. (Citations) ACTIVE

(19) Environmental Impact of Transport in City Center. Great Santiago Case. The objectives are to develop an environmental transport impact assessment model and to apply it to the case of Santiago City Center. J. E. Coeymans. P. Gross. J. Mattas. HRIS 11. ACTIVE

New Projects

(20) Evaluation of Extension Alternatives to the Mass Public Transport Network in Santiago. To develop a planning model of alternatives for extensions to the metro network. J. E. Fernandez, J. E. Coeymans. J. Diaz. HRIS 12. ACTIVE

(21) Traffic and Public Transport Problems in a Medium Sized City. The Case of Concepcion. To assess the traffic and problems and to develop a new transport network. J. Coeymans, J. Fernandez, J. Diaz. T. Yeloso. HRIS 12. ACTIVE

(22) Comprehensive Traffic Management Scheme for Linares (Medium Size Town). Special reference to developing countries' traffic problems. Coeymans. J. De Cea, J. Diaz. HRIS 12. COMPLETE

5. DEPARTMENT OF CIVIL ENGINEERING, INSTITUTE OF RESEARCH AND MATERIALS TESTING, UNIVERSITY OF CONCEPTION (Departamento de Ingenieria Civil. Instituto de Investigaciones y Ensayes de Materiales (IDIEM). Universidad de Concepcion): Concepcion.

(1) Engineering Properties of the Granitic Coarse Sand ("Maicillo") of Concepcion. To analyze the possibilities of utilizing this abundant material in construction of roads. M. Poblete R., E. Ebensperger. D. Benavente. HRIS 62. (Citations) COMPLETE

CHINA-(TAIWAN)

Supplementary Survey - 1980

Chien Hung Hu

The 1980 survey of China (Taiwan) was reported by Mr. Chien Hung Hu, Chief, Road Maintenance Department, Taiwan Highway Bureau. Seven new projects are reported, three of which are shown to be complete.

2. TAIWAN HOUSING & URBAN DEVELOPMENT BUREAU: 4, Sect. 1, Kai-Jeng St. Taipei (100)

(10) Improvement Study and Planning Around Taichung City's Railway Station. Evaluation of improvement planning around central business district and railway station. Chien Hung Hu. HRIS 12. (Citations) COMPLETE

11. INSTITUTE OF TRAFFIC AND TRANSPORTATION ENGINEERING NATIONAL CHIAO-TUNG UNIVERSITY: 114 Chung-Hsiao W. Rd., Sect. 2, Taipei (100)

(5) A Study on Parking Management System and Rate Structure. Overview current parking regulations and management organizations in Taipei; suggest improvements and plan rate structure. Chien Hung Hu. HRIS 11. (Citations) ACTIVE

(6) Study on the Coordinated Development of the Outward Traffic and Transportation System of Shin-Yi Sub-Center in Taipei. Determine impact of Shin-Yi Sub-Center on the traffic pattern in Taipei and plan traffic and transportation facilities to support activities in the Center. Chien Hung Hu. HRIS 12. COMPLETE

(7) Planning Study of the Parking Lots in Taipei (1979). A study of the parking characteristics and planning the parking lots of Chung-Shan and Ta-An District in Taipei. Chien Hung Hu. HRIS 12. COMPLETE

(8) A Study On the Method for Traffic Distribution Estimation. To develop a method and design its computer program for traffic distribution estimation. Chien Hung Hu. HRIS 13. (Citations) ACTIVE

(9) Study on the Traffic Regulation Facilities for Taipei Expressway. Planning the traffic regulation facilities for Taipei Expressway. Chien Hung Hu. HRIS 54. ACTIVE

(10) Planning of Traffic Improvement on the Arterial Road System in Taipei. Research and plan the long-range and short range traffic improvement methods for Taipei arterial road system. Chien Hung Hu. HRIS 54. ACTIVE

COLOMBIA

Supplementary Survey 1980

Sergio Pabón Lozano

The 1980 survey of Colombia was reported by Ing^{o} Sergio Pabón Lozano. Twenty-nine new projects are listed and 18 are shown to be complete.

3. PONTIFICAL JAVERIANA UNIVERSITY (Pontificia Universidad Javeriana): Carrera 7a, No. 40-62, Bogotá, D.E.

(11) A Study on Government Funding to Massive Urban Transportation Systems in Colombia. An historical review of transportation systems including a study on government policies dealing with funding with comments on dealing with alternative schemes. J. Londoño. A. Uribe. HRIS 14. (Citations) COMPLETE

(12) The Land Transport Contract. An analysis of different aspects of land transport contracts in the context of current commercial law. C. Aguirre. HRIS 15. (Citations) COMPLETE

(13) Comparative Study of the Stripping Tests for Asphalt Mixtures. An evaluation of several stripping tests when applied to aggregates which adhere poorly. C. Medina, J. Payán. HRIS 31. (Citations) COMPLETE

(14) Microprocessed Automatic Control Applied to Vehicles. A study of a microprocessor installed in a vehicle and simulation of system behavior with a microcomputer. H. Llinas M., N. Garcia. HRIS 53. (Citations) COMPLETE

6. UNIVERSITY OF THE ANDES (Universidad de Los Andes): Apartado 4976, Bogotá, D.E.

(41) A Comparative Study on Different Alternatives for Private-Owned Car Insurance Fares. A microanalytic model was developed to study the incidences of insurance fares in privately owned cars on owners' behavior and on insurance costs. A. Valderrama. HRIS 15. (Citations) COMPLETE

9. NATIONAL UNIVERSITY OF COLOMBIA (Universidad Nacional de Colombia): Apartado Aereo 5885, Bogota

a. Department of Civil Engineering (Departamento de Ingenieria Civil): Same address

(18) Skidding Resistance in Flexible Pavements Built in Bogota City. An evaluation of thirteen locations on the main streets of Bogota City representing typical wearing surfaces to correlate skidding resistance and surface texture. R. León, G. Ojeda, H. Toro. HRIS 24. (Citations) COMPLETE

(19) On-the-Road and In-Plant Results from Marshall Tests - A Comparative Study. A study on results obtained from Marshall Tests performed on in-plant mixtures and on-the-road mixtures with resulting proposals for design purposes. H. Gaitán, O. Jaimes, C. Sandoval. HRIS 31. (Citations) COMPLETE

(20) In-Situ Density Measurements in Soils Using Nuclear Techniques. A presentation of basic concepts on nuclear techniques to measure density and water content in soils and a discussion of surface and in-depth measuring devices. F. Hernández, J. Medina, C. Santos. HRIS 34. (Citations) COMPLETE

(21) Evaluation of Damages Caused on Pavements of Bogota's North Area by Trees Planted Nearby. Identification of types of trees causing pavement damage and estimates of costs to repair them. L. Beltrán M., M. Cardona A., F. Mojica F., L. Villate S. HRIS 40. (Citations) COMPLETE

(22) Errors Involved in Soil Mechanics Classification Test. A study of errors in soil mechanics classification caused by use of different tests conducted by different workers as well as tests made in different laboratories. L. Beltrán M., F. Gallego V., M. Olmos V., J. Pulido M. HRIS 61. (Citations) COMPLETE

9. (23) Geotechnical Evaluation of the Quebradablanca's Landslide. An evaluation of the geotechnical causes of a major landslide on an important highway that cost more than one hundred lives in 1974. A. González G., M. Uribe, E. Forero, H. Patiño. HRIS 63. (Citations) COMPLETE

(24) PETREO - A Computer Program for Slope Stability - Analysis in Rock Mechanics. A computer program which allows a rock stability analysis to be carried out considering different ways of failure. A. González G., G. Calderón H., L. Contreras. HRIS 63. (Citations) COMPLETE

b. Transportation Research Program (Programa de Investigaciones del Transporte):
Apartado Aereo 53, 44, Bogota

(18) Epidemiology of Traffic Accidents in Bogota. An analysis of human, location, time and climate factors on traffic accidents in Bogota. H. Collazos P., S. Pabón L., A. Sánchez. HRIS 51. (Citations) ACTIVE

(19) A Method for the Study of Traffic Accidents in the Country. A system for determination of highway bottlenecks using accident information collected by the Instituto Nacional del Transporte. S. Pabón L., F. Escobar, H. Ramirez, R. Soto. HRIS 51. (Citations) ACTIVE

(20) Maximum Volumes Per Hour in National Highways. To obtain the volume per hour for designing future highways of the country. S. Pabón L. HRIS 55. (Citations) ACTIVE

(21) Trends in Daily Average Traffic of the National Highways. To establish trends in the increasing daily average traffic on the basis of information provided by twenty permanent counting stations. S. Pabón L., J. Sáenz O., J. Torrado G. HRIS 55. (Citations) ACTIVE

23. UNIVERSITY OF CAUCA (Universidad del Cauca): Calle 5 No. 4-70, Popayán

(6) Road Network Project in "Departamento Del Cauca". A social and economic study to establish the need for new low cost roads in the Departamento del Cauca. O. Fernández, J. Montaña, E. Ospina, R. Arellano, R. Herrera. HRIS 12. (Citations) ACTIVE

(7) A Study of the Public Transportation System in Popayan, Colombia. An analysis of the effectiveness and functionality of public transportation in Popayan in order to suggest means of optimizing it. O. Fernández, L. Betancur, E. Vargas. HRIS 16. (Citations) ACTIVE

(8) Low Cost Roads - Some Criteria for Design and Construction. To present design and construction criteria so low cost roads can be built in remote areas with possibility of improvement and enlargement in the future. O. Fernández, R. de Medina. HRIS 21. ACTIVE

(9) A National Research Project on Pavements. A study on the behavior of pavements including test sectors specially built, an experimental track, and study of several typical roads built in the country. O. Fernández, E. de Lara, L. Zuñiga, A. Murgueitio. HRIS 24. ACTIVE

(10) Concrete Blocks Pavements in Popayan's Streets. A review of the behavior and methods of design and construction of concrete block pavements including evaluation of quality and quantity of materials sources. O. Fernández, L. Zuñiga, A. Mantínez. HRIS 24. (Citations) COMPLETE

(11) The Influence of the Fine Fraction on the Mechanical Behavior of Granular Base Courses. An evaluation of the effects of the finer fraction (passing #200 sieve) on the mechanical properties (stress-strain) of noncrushed aggregates. O. Fernández, E. de Lara, R. Inserrato. HRIS 35. (Citations) COMPLETE

COLOMBIA (contd)

23. (12) Traffic Volumes in Colombian Roads During 1976 and 1977. A study of the volume and composition of traffic throughout Colombian roads. O. Fernández, J. Uribe. HRIS 55. (Citations) COMPLETE

(13) Comparison Between Traditional and Modified Norms of In Situ Density Test. To establish the differences between traditional and modified in situ density tests, using several types of materials and tests. P. Lederman Z., C. Fajardo, A. Pabón, L. Izquierdo. HRIS 61. (Citations) ACTIVE

(14) Additional Indices for Classifications in Soil Mechanics. To establish new and modified indices, applicable to classifications in residual and volcanic soils. A. González G., H. Ramirez, L. Hernández, H. Florez. HRIS 61. ACTIVE

(15) Computer Programs for Slopes Stability Analysis. The methods of slopes stability analysis developed by Bishop and Jambú were programmed with applications to circular failure surfaces and homogeneous soils. O. Fernández, L. Carrillo, L. Rivera. HRIS 63. (Citations) COMPLETE

24. RURAL WAYS NATIONAL FUND (Fondo Nacional de Caminos Vecinales): Avenida Caracas No. 63 - 57, Bogotá

(1) Social and Economic Changes Produced by the Construction of Rural Roads Using the Pick and Shovel System. A methodology to evaluate changes in human level of life produced by construction of rural ways is proposed on the basis of certain social and economical parameters. Development Alternatives, Inc. and Ofisel Ltda. HRIS 15. (Citations) COMPLETE

(2) Comparative Cost Study of the Intensive Labor Force System (Pick and Shovel) and the Modern Methods of Rural Ways Construction. An analysis of the cost differences between the pick and shovel system and the mechanized system, with particular reference to the cost per kilometer of construction and savings in foreign currency due to nonuse of equipment and imported oil. Ingestudios Ltda. HRIS 15. ACTIVE

(3) Environmental Factors Related to the Pick and Shovel Method of Rural Ways Construction. An evaluation of changes in environmental conditions due to rural road construction using the pick and shovel method, considering erosion, landslides, sedimentation, floods and damages to privately owned land. Gennett Fleming Corddry and Carpenter, Inc. HRIS 17. (Citations) COMPLETE

CZECHOSLOVAKIA

Resurvey - 1980

Tibor Marfai

The 1980 survey of Czechoslovakia, reported by Mr. Tibor Marfai, Head of the Highway Safety and Traffic Engineering Division, Hungarian Highway Transportation Research Institute, includes 49 projects, 4 of them for the first time. A total of 40 projects is shown to be complete.

2. ROAD DEVELOPMENT INSTITUTE, PRAGUE (Ustav Silnicniho Hospodarstvi Praha): Hybernska 5, Praha 1

    (3) Phase I "Highway Network Data File". Develop a system for reference in a road data bank and determine the range of fixed parameters to be included. H. Safkova. HRIS 11. COMPLETE

    (4) Effects of Specific Circumstances at Accident Prone Locations on Traffic Accident Occurance and Gravity. Develop methods of finding and classifying such locations for automatic data processing; evaluating efficiency of various constructional and traffic engineering measures at these locations; and propose remedial measures. C. Luhan, I. Bohacek. HRIS 51. COMPLETE

    (5) Mathematical Modelling of Highway Network. Analysis and prediction of trips on the networks; evaluation of highways on basis of trip exchange and land-use patterns; evaluation of alternatives of prospective network configurations. E. Pallier. HRIS 13. COMPLETE

3. RESEARCH INSTITUTE OF CIVIL ENGINEERING (VUIS) (Vyskumny ustav inzinierskych stavieb): Lamacska 8, Bratislava, Slovakia

    a. Road Construction Section: Same adress

    (1) Observation of Water and Thermal Regime in Subgrade. A long range study of the effects of water and temperatures in subgrades to solve problems of pavement design with respect to drainage and frost action. Benko, Medelsky, Gschwendt, Poliacek. HRIS 63. COMPLETE

    (2) Deformation Properties and Characteristics of Road Building Materials. A study of the deformation properties of soils, cement-bound materials, bituminous mixes, and other material with the influence of temperature and frequency under stress. M. Vachalek, I. Gschwendt, J. Homolka, I. Poliacek. HRIS 62. COMPLETE

    (3) Pavement on Rock Subgrades. Development of specifications for blasting and constructing of rock bases for pavements. Vojta. HRIS 33. COMPLETE

    (5) Non-Destructive Methods of Checking Road Base. To develop non-destructive methods of checking structural values of road pavements, by means of laboratory study of fatigue of bituminous pavements, and by vibratory methods in-situ. T. Kadlecik, Vachalek. HRIS 24. COMPLETE

    (6) Design of Rigid and Flexible Pavements. Development of specifications for the design of pavements. I. Gschwent, I. Poliacek, A. Grancic, Slachta. HRIS 24. COMPLETE

    (7) Repairs of Surface and Strengthening of Cement Concrete Pavements. Development of procedures for the repair of damaged concrete pavements, using various cements, resins, bituminous mixtures. Stibranyi, Tomanec, Chupik, Krchov, Purdes, Smola. HRIS 40. COMPLETE

    (9) Antiskid Treatment of Wearing Course of Cements. Development of procedures for treatment of wearing courses for concrete pavements using various natural and artificial aggregates to obtain an antiskid surface. Gallus. HRIS 24 COMPLETE

CZECHOSLOVAKIA (contd)

3. a. (10) New Circular Test Track. Full-scale automatization of track operation and recording techniques using a 3-armed loading vehicle; optimization of road pavements with regard to fatigue and life service. Grancic, Molnar, Baska, Vieska. HRIS 24. COMPLETE

(11) Motorcar Tunnels and Underground Construction. Study of the design of construction methods for large-scale traffic tunnels. Mencl and others. HRIS 21. COMPLETE

(12) Reducing the Pavement Thickness by Increase of Qualitative Parameters of the Particular Layers. On the basis of fatigue and life service of the pavement, optimize the design and provide data for catalogue of pavement system construction. Medelsky, Grancic, and others. HRIS 24. COMPLETE

(13) Progressive Technology of Earthwork Construction. Design of earthwork construction in rock and on poor bearing subgrades to obtain maximum savings of agricultural areas and maximum utilization of local materials. Podel, Vojta, Petrik, Brothanek. HRIS 33. COMPLETE

(14) Attestation of New Flexible Pavements Structural Design Method. A study of temperature and moisture regimes, materials fatigue, effects of moving loads, and other considerations in pavement design. Gschwendt, Grandcic, Medelsky, Kadlecik, Vachalek. HRIS 24. COMPLETE

(15) Technology of Concrete Pavements. A study including contraction joints, resistance to deicing salts, and pavement roughness. Slyske, Barnas, Formanek, Rikovsky, Rigan. HRIS 24. COMPLETE

(16) Technology of Bituminous Pavements. Study including stability, design of roughened texture, use of sulfur additives and local waste materials. Kucera, Lovecek, Mraz, Barnas, Bahidsky. HRIS 31. COMPLETE

(17) Behavior of Flexible Pavements Under Intraurban Transits. Study of rutting, sound barriers, rail contact with pavement, and environmental problems. Lovecek, Smola, Kocka. HRIS 24. COMPLETE

(18) Nondestructive Testing Methods of Road Materials and Multilayer Systems. To determine the dynamic road characteristics by the method of phase velocities, so as to calculate various moduli, layer thickness and compaction. T. Kadlecik. HRIS 34. (Citations) COMPLETE

(19) The Verification of the Improved Road Types with Regard to the Mechanical and Long-term Dynamic Loading. To observe and verify the influence of material characteristics on road design, including bitumen mixes, fatigue resistance and service life of structures. A. Grancic, I. Gschwendt, M. L. Vachalek. HRIS 34. (Citations) COMPLETE

(20) The Urban Traffic Roads in Connection with Tramway Tracks. The design of a road network in conjunction with tramway design, covering both normal sections and those where vertical loadings are associated with the horizontal forces of traffic acceleration and deceleration, with concern over the increase of deformation resistance of bituminous mixes. I. Bartik. HRIS 24. (Citations) COMPLETE

(21) The Technology of New Structures of Bitumen Roads. A verification of the characteristics of bitumen mix components and their influence on the strength parameters with regard to resistance against deformations. Z. Lovecek, M. Sekera, K. Bahidsky. HRIS 31. (Citations) COMPLETE

(22) The Durability Increase of the Road Cement Top Course by Finishing of the Concrete Micro Structure. Study of the influence of concrete components, especially of particles sized from 0 to 0.25 mm on the aeration and on the cement concrete top course resistance Also includes studies of finishing operations and joint sealing. I. Formanek. HRIS 33. (Citations) COMPLETE

3. a. (23) The Optimization of Blasting with Regard to the Lump Size of the Muck. To design a technology for rock material disintegration to the optimum fragmentation, so that it can be immediately used in high rock embankments. R. Podel, A. Vojta. HRIS 33. (Citations) COMPLETE

(24) Progressive Methods of Road Tunnels and of Underground Structures. To design methods of mechanization for constructing tunnels, including machinery, linings, anchors for both earth and rock, and waterproofing. Mencl, K. Klein, Stastny, Misove, Poltarsky. HRIS 33. (Citations) COMPLETE

(25) Research of the Safety of Blasting Operations. A detailed analysis and evaluation in the field of safety blasting operations, for the development of new safety regulations. R. Podel. HRIS 33. (Citations) COMPLETE

(26) Building Embankments on Low Bearing Subgrade by Reinforcing the Fill. The use of computer programs for calculating changes in stability and settlement resulting from various types of reinforcing, and comparison of such calculations with actual measurements. P.M. Petrik, R. Baslik, St. Holicky. HRIS 63. COMPLETE

New Projects

(27) Structural Pavement Design from the Point of the New Material - Base and the Science - New Knowledge. To introduce new design and maintenance techniques and materials into the pavement management system. Gschwendt, Grancic, Poliacek, Formanek. HRIS 24. ACTIVE

(28) Saving and the Effective Utilization of the Bituminous Binder. To improve bituminous binder with an adhesive agent, reinforce asphaltic mixtures, mixture of sulphur and recycle. Lovecek, Bahidsky, Sekera, Stahl, Vachalek. HRIS 31. ACTIVE

(29) Sub-base Layers from the Local Material - Source. To improve sub-base by applying chemical material obtained from industrial refuse. Mraz, Medelsky, Gschwendt, Nebesky, Benko. HRIS 34. ACTIVE

b. Bridge Section: Same address

(7) Theoretical Problems of Bridges. A broad research project into such aspects of bridges as optimization of statical calculations in elastic and viscoelastic behavior of concrete bridges, pre-stressed bridges, continuous box girders, beam and slab bridges, and computer programs, Javor, Kodl, Kristek. HRIS 25. ACTIVE

(8) New Methods of Prestressing and Anchoring. Detailed studies of double cables, anchoring and couplings, automation of jacking, and cables in lightweight concrete. Lazar, Poltarsky. HRIS 25. COMPLETE

(9) Pre-tensioned Concrete Precast Bridges. Analysis of pretensioned box girders, interaction of bending, shear and torsion with both ordinary and lightweight concrete, on beams of 12 to 30 meter span. Javor, Poltarsky, Modrovich. HRIS 25. COMPLETE

(10) Elevated Highway Bridges. Study of precast elements of these bridges, including pretensioned beams, joints under static and dynamic loadings, optimization of columns, and bridge bearings. Dohnal, Trokan, Zemko. HRIS 25. COMPLETE

(11) Lightweight Concrete Prestressed Bridges. Theoretical and experimental analysis of statical and dynamic behavior of such bridges, including creep, shrinkage and other material tests on this lightweight concrete. Smerda. HRIS 25. COMPLETE

3. b. (12) Pre-tensioned Precast Concrete Railway Bridges. Static behavior of pre-tensioned beams, fatigue characteristics, model analysis, and research on production technology. Brocek, Dohnal, Modrovich. HRIS 25. COMPLETE

(13) Hybrid Electromechanical Models of Beam-Slab Bridges. Model analysis of biharmonical structures, with transformers and computers, for yield lines, cracks, and collapses. Javor, Kristofic. HRIS 25. ACTIVE

(14) Dynamical Analysis of Prestressed Concrete Bridges. Dynamic analysis of framework bridges, mathematical program and experimental analysis of dynamic loading, including composite concrete prestressed bridges with U-girders and reinforced slabs. Hobst, Vegh. HRIS 25. ACTIVE

(15) Reinforced Concrete Bridges from "Armocement". Theoretical analysis of this material for concrete box girder bridges as well as experimental in-situ tests. Smola, Kocka. HRIS 25. COMPLETE

(16) Prestressed Concrete Composite Bridges. Development of standard bridges, 12 to 30 meter span, uniform cross sections, with prestressed box girders and precast slabs. I. Dohnal, T. Javor, J. Kucharik, J. Hyza. HRIS 25. COMPLETE

(17) Experimental Analysis of Beam/Slab Structures and Box Girder Bridges, with Models and In Situ. Comparison of theoretical and experimental analyses of both model and in situ bridges, including effects of atmosphere, temperature, humidity, creep, shrinkage, etc. T. Javor, J. Modrovich, J. Petrasek, V. Kristek. HRIS 25. ACTIVE

(22) Prestressed Concrete Segmental Bridge Structures. Theoretical analysis of shear, torsion, creep, etc. in prestressed concrete bridges, 35 to 65 meter spans, with double I-beams and 2 diaphrams for each segment. T. Javor, P. Smola, V. Kristek, J. Kucharik. HRIS 25. (Citations) ACTIVE

New Project

(23) Raising the Load Capacity and Economical Construction of Segmental Concrete Prestressed Bridges. To study precasting and construction of prestressed segmental concrete bridges and increase capacity through use of high quality material. T. Javor. HRIS 25. ACTIVE

4. ROAD DEVELOPMENT INSTITUTE BRNO (Silnicni vyvoj): Olomoucka 174, BRNO 62700, Slovakia

(1) Protection of Roads Against Snow. To develop a new type of snow fence made from plastics. V. Moravec. HRIS 40. COMPLETE

(2) Use of Thermo-Insulating Materials in Pavements. To build artificial thermal insulating materials, such as polystyrene, into pavement structures to limit frost penetration into pavements and subgrade. J. Zalesak. HRIS 24. COMPLETE

(8) Pavements with a Low Traffic Loading. To develop designs for a pavement with lower bearing capacity to accommodate lower traffic volumes. Lukavsky and others. HRIS 24. COMPLETE

5. RESEARCH AND DEVELOPMENT CENTER OF URBANISM AND ARCHITECTURE (Vyskumne a Vyvojove Centrum Urbanizmu a Architektury): Bratislava

(8) Modal Split on the Level of a Large Territorial Whole. To develop a model to determine variants of the distribution of transportation work/modal split for different types of transport, and the capacity possibilities of separate transport systems capital demands. J. Hladky, I. Dula. HRIS 12. COMPLETE

5. (9) Division of Traffic Relations into a Road Network. To develop a route selection and choice method in a road network, on those routes prospective traffic relations of road transport that will be realized. J. Hladky, M. Hasek, J. Vandas. HRIS 12. COMPLETE

(10) Model of Generated Passenger and Goods Traffic in a Territory. Determination of volume of generated passenger and goods traffic in large areas and the dependence of volumes upon economic and demographic quantities. J. Hladky, J. Koncek. HRIS 16. COMPLETE

DENMARK

Resurvey - 1980

The 1980 survey of Denmark was conducted under the IRRD Program. Forty-eight projects are listed, eight of them for the first time. Sixteen are shown to be complete. Project reports were received by the IRF from the British Transport and Road Research Laboratory, the English documentation center for the IRRD.

1. ROADS DEPARTMENT: MINISTRY OF PUBLIC WORKS (Vejdirektoratet Ministeriet for Offentlige Arbejder): 23 Havnegade, 1058 Copenhagen K

a. National Danish Road Laboratory: Elisagaardsvej 5-7, DK-4000, Roskilde

(7) Prestressed Concrete Test Pavement Near Rodby Havn. To measure deflection and surface irregularities and test core samples. B. Thagesen. HRIS 24 IRRD 602555. (Citations) INACTIVE

(10) Dynamic Plate-Bearing Tests. To develop mobile equipment that will measure and record the modulus of elasticity of pavements. E. Barenholdt, B. R. Jensen. HRIS 24 IRRD 602557. (Citations) INACTIVE

(15) Bearing Capacity of Compacted Gravel Bases. To determine bearing capacity under the influence of density and moisture using plate-bearing test. E. Barenholdt, S. Nielsen. HRIS 62 IRRD 602556. (Citations) COMPLETE

(17) Nuclear Apparatus for Measuring the Moisture Content and the Density of Soils. J. Poulsen. HRIS 34 IRRD 602559. INACTIVE

(24) Testing Methods for Mastic Asphalt on Bridges. To determine the best way to place a layer of mastic asphalt on an orthotropic bridge. C. Woehlk. HRIS 33 IRRD 602561. ACTIVE

(28) Rainfall and Run-off Data from Motorways in Zeeland. To develop design procedures for drainage ditches and pipes. J. E. Borch, J. Jensen. HRIS 22 IRRD 602562. ACTIVE

(30) Effect of Temperature on the Mechanical Behavior of Asphaltic Bitumen. Determination of the requirements for viscosity measurement. HRIS 31 IRRD 600323. INACTIVE

(31) Requirements for Pore Volume in Bituminous Layers. Development of a reproducible method for determining the pore volume from road samples and to measure the E-modulus by means of bending test equipment. A. Skjoldby, B. Hall-Anderson. HRIS 31 IRRD 600324. INACTIVE

(35) Dynamic Triaxial Test. Dynamic testing of gravel materials on large sized specimens. J. Poulsen. HRIS 35 IRRD 602565. ACTIVE

(36) Profilometer and Bump Integrator. Comparing measurements from the profilometer with results from bump integrator to find the correlation between them. T. Johansen. HRIS 24 IRRD 602566. (Citations) COMPLETE

(37) Joint Materials. To develop modern testing methods and specifications for joint materials used in concrete roads and bridges. C. J. Woehlk. HRIS 34 IRRD 602567. ACTIVE

(39) Compaction of Gravel in the Laboratory. Comparison of different methods. J. Poulsen. HRIS 35 IRRD 602569. INACTIVE

(42) Concrete Test Road. To design a concrete pavement with good skid resistance and durability, using local materials. S. Leksoe, O. Rud Hansen, K. Puckman. HRIS 24 IRRD 604182. (Citations) ACTIVE

2. ROYAL TECHNICAL UNIVERSITY OF DENMARK (Dansmark Tekniske Hojskole):
DK-2800, Lyngby

a. Institute of Roads, Traffic and Town Planning: Same address

(44) Urban Renewal and Traffic Safety. To study urban traffic renewal projects and their influence on traffic safety, accessibility and environment. J. Grubb Laursen. HRIS 15 IRRD 602810. INACTIVE

(49) At Grade Intersection in Rural Areas. Investigate traffic capacity and safety, and relate these factors to investment in a decision model. K. Sterner. HRIS 55 IRRD 604180. COMPLETE

(50) Design of Pavements. To study the connection between penetration and elasticity of subgrade determined by deflection and other measurements. C. Busch-Petersen. HRIS 24 IRRD 604181. (Citations) COMPLETE

(51) Setting-Out Procedures in Highway Construction. Precision and demand of resources of various setting-out procedures and the utility of the procedures in relation to aspects of functions are studied. L. Bolet. HRIS 33 IRRD 604184. (Citations) COMPLETE

(52) Simulation of Flexible Pavements. Simulation of the plastic behavior of a of a three-layer structure under varying climatic and loading condition, on a desk top computer. P. Ullidtz. HRIS 24 IRRD 604962. (Citations) ACTIVE

(53) Priorities in Urban Traffic Renewal. To establish an action program for changing urban streets to pedestrian precincts and play areas. O. Soerensen. HRIS 12 IRRD 604963. ACTIVE

(54) The Response and Performance of a Two-Layered Pavement. An indoor track study of this pavement with road testing machines, in terms of cracking, shear deformations, rutting and longitudinal roughness as a function of number of wheel passes, with comparison of the observed information with that predicted. P. Ullidtz. HRIS 24 IRRD 604964. ACTIVE

(56) Pedestrians in Urban Traffic. A study of pedestrian problems to find a connection between safety, accessibility and environment with the pedestrian as a natural part of the overall traffic environment. I. Herrstedt. HRIS 51 IRRD 606353. ACTIVE

New Project

(57) The City and Intercity Transport Centres. A study concerned with access to ports, railway stations, road terminals and airports, including travel disruptions, traffic volume, travel modes and size of terminals. T. Rallis. HRIS 15 IRRD 607321. (Citations) ACTIVE

4. DANISH ASPHALT INDUSTRIES, ROAD RESEARCH LABORATORY: Stamholmen 91. DK-2650, Hvidovre

(17) Influence of Sodium Chloride Solutions on Asphaltic Concrete. Evaluation of the effect of immersing the material in sodium chloride solution. O. G. Mikkelsen. HRIS 31 IRRD 604093. COMPLETE

(18) Creep Tests on Bituminous Materials. Investigation of the influence of the composition of bituminous materials on the stability, by the uniaxial creep tests. J. M. Kirk. HRIS 31 IRRD 604959. ACTIVE

DENMARK (contd)

4. (19) Stabilization of Lean Moraine Clay with Pulverized Fly Ash, Cement and Lime. Laboratory tests of compressive strength of cylinders with various contents of these materials with the clay, as well as frost heave tests, to be followed by field tests on an experimental section. J. M. Kirk. HRIS 62 IRRD 604960. (Citations) COMPLETE

(20) Determination of the Minimum Mixing Time Necessary to Obtain a Homogeneous Mix. To study the influence of mixing time on the properties of the mix. O. G. Mikkelson. HRIS 31 IRRD 604961. COMPLETE

(21) Sand Asphalt as Base Material. To compare the influence of gradation and binder type on the E-modulus, the stability and the water susceptibility of sand asphalt with those properties of bituminous gravel bases. J. M. Kirk. HRIS 62 IRRD 605637. ACTIVE

(22) Pot-holes in Wearing Courses. To determine the effect of various factors such as frost, salt, compaction and composition on the development of pot-holes in wearing courses. J. M. Kirk. HRIS 24 IRRD 606354. COMPLETE

New Projects

(23) Determination of Binder Content in Bituminous Materials with Nuclear Surface Probe. To compare the nuclear surface probe method with the standard method for determination of binder content by use of solvents, with regard to accuracy of results and time required. J. Kirk. HRIS 31 IRRD 607322. ACTIVE

(24) Effects of Certain Types of Antioxydents in Bitumen. To investigate the influence of zincdiethyldithiocarbonate on bitumen in connection with hardening. E. Nielsen. HRIS 31 IRRD 607323. ACTIVE

5. ILLUMINATING ENGINEERING LABORATORY (Lysteknish Laboratorium): Lundtoftevej 100, DK-2800, Lyngby

(9) The Interrelation Between Road Surface Reflection Properties, Mix Design, and State of Wear. Laboratory testing of samples to investigate this interrelationship under simulated summer and winter conditions. K. Soerensen, B. Nielsen, E. Persson. HRIS 24 IRRD 602696. COMPLETE

(14) Studies on the Precision and Reproducibility of Scandinavian Measurements of Road Surface Retroreflection Properties. The use of a number of measuring devices in cooperating countries for determining reflection properties of road surfaces and markings. P. Oebro. HRIS 24 IRRD 606355. (Citations) COMPLETE

New Projects

(15) Optical and Visual Conditions in Night-Time Driving on Roads Without Fixed Lighting. To coordinate research survey for unlit roads in Denmark, Norway and Sweden with emphasis on optical matters concerning obstacles, road surfaces, road markings and retroreflectors. K. Soerensen, E. Randrup Hansen. HRIS 54 IRRD 607324. ACTIVE

(16) Reflection Properties of Road Markings Illuminated by Vehicle Headlights. To measure the reflection properties of road markings for geometries of illumination and observation relevant to night time driving on unlit roads. S. Lundkvist, K. Soerensen. HRIS 54 IRRD 607325. (Citations) ACTIVE

6. COUNCIL OF ROAD SAFETY RESEARCH: Akademivej, Building 371, DK-2800, Lyngby

(5) Traffic Replanning in a Dense Urban Area. Use of traffic management methods in replanning existing streets in a specific area of Copenhagen in order to reduce traffic accidents. U. Engel, J. Sterner. HRIS 54 IRRD 600326. ACTIVE

6. (8) Road-User Perception. An analysis of behavior of some driver groups on a difficult road section where different roadmarking systems are tested. B. Nygaard. HRIS 52 IRRD 602576. ACTIVE

(10) Traffic Patterns of Bicyclists and Moped Riders. Collect information on ownership and usage of these vehicles in Denmark, rider attitudes and knowledge. U. Engel, L. V. Iversen. HRIS 52 IRRD 604091. COMPLETE

New Projects

(11) Frequency of Driving Under the Influence of Alcohol. To establish the actual frequency of driving under the influence of alcohol through a nationwide program of roadside surveys to be carried out over a one-year period. J. Christensen. HRIS 52 IRRD 607326. ACTIVE

(12) Analysis of Single Vehicle Traffic Accidents. To describe characteristics of single vehicle accidents and to identify possible ways of decreasing them. H. Lund. HRIS 51 IRRD 607327. ACTIVE

(13) The Outdoor Activities of Children. To describe Danish children as road users, where, when and why are they out in traffic and which means of transportation they use. L. Iversen. HRIS 16 IRRD 607328. ACTIVE

7. LABORATORY OF ROAD DATA PROCESSING: 42, Stationsalleen, DK-2730, Herlev

(2) Road Data Bank. The building up of a road data bank to provide an integrated information system to be able to perform all important functions for a government agency. J. Sloth, J. Froehlich. HRIS 11 IRRD 602690. ACTIVE

(3) Integrated Road Design Program System. Development of a computerized system for various highway design functions. O. Djurhuus, V. Laurensen, N. Hoffman. HRIS 21 IRRD 602691. ACTIVE

(4) Traffic Calibrating Model. Development of calibration methods for traffic models based only on observations of traffic volumes. T. Jensen, S. K. Neilsen, J. Holm. HRIS 55 IRRD 602692. ACTIVE

(5) Integrated Program System for Traffic Planning Purposes. A comprehensive traffic estimating system including interview analyses, compution of traffic distribution and prognoses. S. K. Nielsen, T. Jensen, J. Holm. HRIS 13 IRRD 602693. ACTIVE

(7) EDP System for Processing Results from Automatic Counting of Hourly Traffic. To establish an automatic data processing system that will take paper tapes from automatic traffic counters and prepare statistical data needed for various planning operations. J. Sloth, L. G. Nielsen, V. B. Bech. HRIS 55 IRRD 603639. COMPLETE

11. ACOUSTICAL LABORATORY: Lundtoftevej 100, DK-2800, Lyngby

(1) Traffic Noise Attenuation by Belts of Trees. To measure traffic noise propagation over grass covered level ground and through belts of trees. Jorgen Kragh. HRIS 17 IRRD 605647. (Citations) COMPLETE

(2) Traffic Noise Reduction Barriers (Earth Banks). Study of the effects in noise reduction by installation of a 6 meter high embankment, as compared to a level grass covered area. Jorgen Kragh. HRIS 17 IRRD 605648. (Citations) COMPLETE

(3) Traffic Noise on Various Types of Road Pavements. Comparison of the noise levels as determined both inside and outside a car driving on various type surfaces. Jorgen Kragh. HRIS 17 IRRD 605649. (Citations) COMPLETE

ETHIOPIA

Resurvey - 1980

Teferra Mengesha

The 1980 resurvey of Ethiopia was reported by Mr. Teferra Mengesha, A/Planning and Programming Manager, Ethiopian Road Authority. Twenty-two projects are included, 15 of them for the first time. Of the total, 7 are shown to be complete.

1. ETHIOPIAN ROAD AUTHORITY: P. O. Box 1770, Addis Ababa

(23) Engineering Materials. Compilation of an inventory of engineering materials, particularly those considered to be useful in construction of rural roads. C. J. Lawrence, Ato Hamza Mohammed, R. E. Black, Ato Kassaye. HRIS 34 ACTIVE

(32) Economic Feasibility Studies Bethor-Woreillu, Mota-Bahr Dar, Nekempte-Bure and Maji-Felege Neway Roads. An economic assessment of the potentials of the areas traversed to determine feasibility of constructing new gravel roads. Planning and Programming Division. HRIS 15 COMPLETE

(37) Field Survey, Laboratory Investigations and Compaction Trial of Cinder Materials. Study of the plasticity, particle size distribution and strength of cinders when considered as weak aggregate. Materials Research Branch and TRRL. HRIS 34. COMPLETE

(38) Construction and First Six Months' Performance of Cinder Materials on Experimental Sections of the Awash-Aseia Road. A study of the performance of different types of rollers with a variety of cinder gravels as bases and subbases under a bituminous surface and gravel road. Materials and Research Branch and TRRL. HRIS 34 COMPLETE

(41) Axle Load Survey in Ethiopia. Determine magnitude of present axle loads of commercial vehicles and make recommendations of most appropriate limits for Ethiopia. Materials and Research Branch and TRRL. HRIS 55. COMPLETE

(42) Terrain Evaluation for Highway Engineering: Land Systems Mapping of the Southern Wollo Area. To provide information on where it is most likely to find good road building materials in particular types of terrain and to aid in route locations. Materials and Research Branch. HRIS 61. INACTIVE

(51) Road Inventory. To develop a complete and computerized inventory of all roads, with provision for updating, that will include pavement condition, width, bridges, culverts, and other road structures. With Roy Jorgenson Associates. HRIS 11. ACTIVE

New Projects

(61) Road Monitoring and Evaluation System for Ethiopia. A system to plan and select low-class roads for development and to monitor efficiency and durability of construction. Staff. HRIS 11. ACTIVE

(62) Second Road Sector Program. An overview of transport policy and strategy to identify and prioritize main and rural road projects and an indication of costs. T. Mengesha. HRIS 12. ACTIVE

(63) Economic Feasibility Study of Chida-Sodo Feeder Road. An economic evaluation of the proposed road reflecting increased value due to increased agricultural production. Staff. HRIS 12. ACTIVE

(64) Economic Feasibility Study of Dera-Mechara Feeder Road. An appraisal of the economic value of construction of the 145 km. gravel road which is expected to increase agricultural production. Staff. HRIS 12. ACTIVE

1. (65) Economic Feasibility Study of Dembidolo-Bambessie Feeder Road. To determine the viability of constructing a 203 km. gravel road in a previously inaccessible area of southwestern Ethiopia. Staff. HRIS 12. COMPLETE

(66) Economic Feasibility Study of Ghinnir-Mechara Feeder Road. Cost and benefit study of constructing a feeder gravel road linking the administrative regions of Hararghe and Bale in southeastern Ethiopia. Staff. HRIS 12. COMPLETE

(67) Economic Feasibility Study of Gore-Tepi Feeder Road. An investment analysis to determine whether expenditure on the road would show a satisfactory rate of return. Staff. HRIS 12. ACTIVE

(68) A Study of Road User Taxation in Ethiopia. A five year projection concerning total revenue to be collected from road user taxation and projected measures which will produce additional revenue. T. Mengesha. A. Ambo. HRIS 14. ACTIVE

(69) Gravel Loss Study. To determine the rate of gravel loss of different materials under different climatological and traffic conditions. H. Mohammed. HRIS 24 ACTIVE

(70) Development of Deflection Criterion Curve. To develop deflection criterion curve for crushed stone bases under surface dressing and determine effectiveness of different types of overlay materials in reducing deflections and extending life of pavement. D. Afework. K. Aklilu. HRIS 24. FUTURE

(71) Use of Klegg Hammer. Adopt this new instrument for controlling in-situ compaction. Staff. HRIS 33. FUTURE

(72) Weathered Basalt Study. To map the assurance of weathered basalts that produce natural gravel for road construction. H. Mohammed. W. Markos. HRIS 35 ACTIVE

(73) Awash-Asella Axle Load Survey. To ascertain the existing equivalence factor used in connection with the Awash-Asella road and performance of cinder gravel experiment. K. Aklilu. HRIS 55. FUTURE

(74) Mass Movement Study in the Blue Nile Gorge. To study the active slide problem of the Blue Nile Viaduct area. Staff. HRIS 63 FUTURE

8. ROY JORGENSEN ASSOCIATIONS, INC.: P.O. Box 175. Gaithersburg. Md. 20760

New Project

(3) Preconstruction and Construction Management System Development. A comprehensive construction management system involving work measurement, resource requirements, records and reports, and management planning, evaluation and control. Roy Jorgensen Associates. HRIS 11. COMPLETE

FINLAND

Supplementary Survey - 1980

The 1980 survey of Finland was conducted under the IRRD program and lists 75 new projects. Project reports were received by the IRF from the British Transport and Road Research Laboratory, the English language documentation center for the IRRD.

1. FINNISH NATIONAL BOARD OF PUBLIC ROADS AND WATERWAYS (Tie-Ja Vesirakennushallitus): Etelaesplanadi 4, 00130, Helsinki 13.

a. Economic Division: Same address.

(14) Checking the Results of the 1974 Study of Personal Travel. A postal inquiry of possible changes in passenger behavior patterns since 1974. S. Parkko. HRIS 55. IRRD 606891. ACTIVE

(15) Quality Control of Road Data Bank Information. The data contents of the road data bank of the RWA are analyzed. M. Raekallio. HRIS 11. IRRD 606892. ACTIVE

b. Design Division: Same address.

(5) Composite Girder Bridges. Literary and laboratory study of the specification and amplification of the techniques of planning and constructing composite girder bridges. E. Isoksela. HRIS 25. IRRD 606894. ACTIVE

c. Construction Division: Same address.

(64) The Use of Byproducts in Pavements. A study of the suitability of ferro-chromium and copper slag as pavement aggregate and filler. V. Markkula. HRIS 34. IRRD 606884. ACTIVE

(65) The Use of Granulated Industrial Slags in Asphalt Concrete Pavements. To study the suitability of granulated blast-furnace slag as concrete pavement binder, including study of the cement/slag ratio of the mix and its resistance to salt and wear. E. Matilainen. HRIS 34. IRRD 606885. ACTIVE

(66) A Study of Asphalt Concrete Wear. To study the wear and strength of different types of asphalt concrete including observations from 16 asphalt concrete sections, the oldest made in 1974. V. Markkula. HRIS 31. IRRD 606886. ACTIVE

(67) Development of a Correction Coefficient for Temperature and its Calibration for Devices for Measuring the Bearing Capacity. To develop individual temperature correction coefficients for various devices for measuring bearing capacity. R. Orama. HRIS 62. IRRD 606888. ACTIVE

(68) An Analysis and In-Situ Calibration of Devices for Measuring Stress and Deformation. An analysis by measurements in situ of stress and deformation under a wheel load to be used for road structure design. R. Orama. HRIS 24. IRRD 606889. ACTIVE

(69) The Suitability of Dynamic Measuring Techniques for Measuring the Bearing Capacity. To analyze the suitability of dynamic measuring techniques for measuring the bearing capacity of stabilized and unstabilized courses by comparing the results obtained with static and dynamic loading. R. Orama. HRIS 24. IRRD 606890. ACTIVE

1. c. (70) Requirements of Pavement Friction. To analyze the friction properties of different pavements and factors influencing friction and the effect of tire wear on the friction coefficient between the tires and the road surface. V. Markkula. HRIS 24. IRRD 606893. ACTIVE

(71) Foundation of Bridges on Unpiled Embankment Fill. A study of the compaction of the underwater banks of bridges and the appropriate grainsize curves for the embankment material for different bridge foundations. L. Bjorksten. HRIS 62. IRRD 606887. ACTIVE

d\. Operative Division: Same address.

(27) The Effect of the Road Geometry on Safety. To study the effect of road geometry on the safety of encounters, queueing, etc., based on accident data, traffic and geometry from the road data bank. R. Niemela. HRIS 21. IRRD 606895. FUTURE

(28) Junction Arrangements for Light Traffic. To study the safety effects of various junction arrangements made in 1970-79 for light traffic. R. Niemela. HRIS 21. IRRD 606896. ACTIVE

e\. Districts of Central Ostrobothnia: Same address.

(1) The Plan of the Private and Local Road Network. To list private roads entitled to state subsidy, their administrative categories, and road construction and improvement requirements. HRIS 11. IRRD 606532. (Citations) ACTIVE

2. TECHNICAL RESEARCH CENTRE OF FINLAND, ROAD AND TRAFFIC LABORATORY.
02150, Espoo 15

(107) The Rolling Resistances of Railway Coaches at Riihimaki, 1979-80. To measure rolling resistances by a new method using the traffic analyzer which can take travel times for coasting coaches with a resolution of 1/1000s. H. Kallberg, P. Laitakari. HRIS 53. IRRD 607008. ACTIVE

(108) Economical Service Life of Lorries. To study the actual service life of lorries by means of interviews and theoretical calculations. H. Kallberg, L. Hilska. HRIS 15. IRRD 607009. ACTIVE

(109) The Improvement in Air Deflectors for Container Lorries. To test air deflectors in field circumstances and study fuel consumption in different arrangements of lorry containers. K. Alppivuori. HRIS 52. IRRD 607010. ACTIVE

(110) Overtaking and Platoons on Two-Lane Rural Roads. To consider overtaking possibilities based on time-gap distribution and sight distance and impact on accident risk. H. Kallberg. HRIS 55. IRRD 607011. ACTIVE

(111) National Freight Flow File. To produce a file of long distance freight transport through factory interviews during 1980. H. Kallberg, M. Pyymaki. HRIS 11. IRRD 607012. ACTIVE

(112) The Connecting of Floating to Lorry and Tractor Transport. To improve the connection between floating and land transport modes through interviews, field surveys and literature studies. M. Pyymaki, J. Hackman. HRIS 11. IRRD 607013. ACTIVE

(113) The Improvement of Short Distance Moving Methods for Containers. To improve the moving and transportation of containers through technical development of lorries. M. Pyymaki. HRIS 12. IRRD 607014. ACTIVE

2. (114) A Safety Fender for a Train. To study the operation of the safety fender for trains by use of super fast cameras at collision tests. R. Kulmala P. Laitakari. HRIS 51. IRRD 607015. ACTIVE

(115) The Evaluation of Traffic Safety in Land-Use Planning. To investigate the stage of land-use planning at which the environmental characteristics that influence traffic safety are included. H. Peltola. T. Lepisto. R. Kulmala. HRIS 21. IRRD 607016. ACTIVE

(116) The Background Factors to the Trend of Traffic Accidents. To seek the reasons why accidents began to increase in 1978 after decreasing the previous six years. M. Salusjarvi. R. Kulmala. HRIS 51. IRRD 607017. ACTIVE

(117) Road Traffic Law. A before-after study of the effects of road traffic law changes in 1980 on traffic safety. M. Salusjarvi. R. Kulmala. HRIS 70. IRRD 607018. ACTIVE

(118) The Change from Climbing Lanes to Overtaking Lanes. A before-after study of changes on traffic flow and safety resulting from replacing climbing lanes with overtaking lanes. R. Kulmala. HRIS 55. IRRD 607019. ACTIVE

(119) The Traffic Safety of Pedestrian Crossings. To study the safety of pedestrian crossings of different types by the traffic conflict method and define safety effects of traffic signal controls. R. Kulmala. HRIS 51. IRRD 607020. ACTIVE

(120) Developing the Work of Traffic Accident Investigation Boards in Finland. To develop methods of on spot accident investigation and its statistical analysis. M. Salusjarvi. V. Kallberg. R. Kulmala. HRIS 51. IRRD 607021. ACTIVE

(121) Emma, Measuring the Effects of Technical Countermeasures on Minor Roads. To produce a handbook which includes the measured effects of different road technical countermeasures excluding road rebuilding. M. Salusjarvi. HRIS 21. IRRD 607022. ACTIVE

(122) Mitra, Methods and Need for Information in Order to Measure the Effects of Traffic Safety Countermeasures. To produce a handbook about what to consider when introducing different kinds of traffic safety countermeasures and their possible effects. M. Salusjarvi. HRIS 51. IRRD 607023. ACTIVE

(123) Miro, Methods for Collecting and Processing Accident Data. A cooperative project concerning police reported road traffic accidents in different Nordic countries. M. Salusjarvi. HRIS 51. IRRD 607024. ACTIVE

(124) Speed Measurements. To take systematic speed measurements at 30 places sited according to the mileage of the road network in Finland. T. Lepisto, M. Salusjarvi. HRIS 55. IRRD 607025. ACTIVE

(125) The Special Costs of Winter Transport. To study wintertime costs of every transport mode to determine whether for economic reasons an attempt to change the modal split of transport modes in winter should be made. H. Kallberg, P. Salminen. HRIS 15. IRRD 607026. ACTIVE

(126) The Use of Steel Slag (Fecr-Slag) in Asphalt Pavements. To determine if fecr-slag from a steel factory can be used instead of natural aggregate in an asphalt pavement. E. Manninen. HRIS 34. IRRD 607233. ACTIVE

(127) A Pavement Test Road at Nurmijarvi 1979. To study a variety of properties of asphalt pavements on a test road at Nurmijarvi. A. Niemi. E. Manninen. HRIS 24. IRRD 607234. ACTIVE

2. (128) The Use of Slags from Steel Factories in Road Pavements. To determine by laboratory tests and test tracks whether slags from steel factories can be used in asphalt or concrete pavements. E. Manninen. R. Alkio. HRIS 34. IRRD 607235. ACTIVE

(129) Maintenance and Strengthening of Gravel Roads. To develop by study and road tests methods for maintenance and strengthening of gravel roads. E. Kankare, A. Saarinen. HRIS 40. IRRD 607236. ACTIVE

(130) Use of By-Products in Road Construction. To research possibilities of using blast furnace slag and fly ash in road construction. R. Alkio. M. Eerola. HRIS 34. IRRD 607237. ACTIVE

(131) Friction Properties of New Asphalt Pavements. To investigate friction properties of new asphalt pavements and factors which have an effect on them. M. Sistonen. HRIS 24. IRRD 607238. ACTIVE

(132) Properties of Surface Dressing for Service Level of Roads. To investigate wear, noise and rolling resistance of tires and fuel consumption of passenger cars on surface dressing. M. Sistonen. HRIS 24. IRRD 607239. ACTIVE

(133) Theoretical Calculations of Palojarvi-Olkkala Test Road. To calculate stresses and strains on the test road using a layered system computer program. M. Huhtala. HRIS 24. IRRD 607240. ACTIVE

(134) Measurement of Stresses and Strains in Road Structures. To take measurements of stresses and strains induced by static load using the falling weight deflectometer or moving truck. M. Huhtala. HRIS 25. IRRD 607241. ACTIVE

(135) Measurements of Stiffness Modulus, Creep and Fatigue Properties of Asphalt Mixes. To measure stiffness modulus, permanent deformations (creep) and fatigue properties of different asphalt mixes using electro-hydraulic testing machines. M. Huhtala. HRIS 31. IRRD 607242. ACTIVE

3. HELSINKI UNIVERSITY OF TECHNOLOGY (Teknillinen Korkeakoulu): Rakentajaanaukio 4. 02150 Espoo 15

a. Laboratory of Traffic and Transportation Engineering: Same address.

(41) Study of Traffic Safety at Public Road Intersections. To analyze 5000 intersections and 1000 accidents during 1973-77. M. Pursula. HRIS 51. IRRD 606517. ACTIVE

(42) The Stability of Traffic Models. To determine the reliability of traffic models using data from Helsinki traffic studies in 1966 and 1976. A. Kalliomaki. HRIS 13. IRRD 606518. ACTIVE

(43) Traffic Accidents at Road Construction Sites. To compare traffic safety at road construction and maintenance sites to that of the road network as a whole. A. Borodavkin, S. Lyly. HRIS 51. IRRD 607243. ACTIVE

(44) A Car-Following Model and Its Application to Congested Highway Traffic. To develop a realistic car-following computer model to be used in road traffic simulation in congested conditions on two lane rural highways. H. Haila, M. Pursula. HRIS 55. IRRD 607244. ACTIVE

4. UNIVERSITY OF OULU (Oulun Yliopisto): Kasarmintie 8D, 90100, Oulu 10.

(27) Oil Gravel Investigation. To determine whether, on lightly trafficked roads, it is possible to use smaller thicknesses and less binder content than normal. M. Koivuniemi. HRIS 24. IRRD 607245. ACTIVE

4.

(28) Effect of Type of Pavement on Fuel Consumption. To determine the influence of the type of pavement and pavement defects, and road geometry, on fuel consumption of cars and lorries. J. Leskinen. HRIS 17. IRRD 607246. ACTIVE

(29) Traffic Noise Investigation. To survey the noise level of traffic in densely populated areas and develop a new method of measuring the traffic noise area. J. Kostama. HRIS 23. IRRD 607247. ACTIVE

5. CENTRAL ORGANIZATION FOR TRAFFIC SAFETY (Liikenneturva): PL 239, 00121 Helsinki 12.

(55) The Aged and Traffic Safety. To analyze the traffic safety situation of the aged through accident statistics analysis, surveys and roadside observations. M. Heinonen, T. Makinen. HRIS 51. IRRD 607248. ACTIVE

(56) To Programme Traffic Safety Research. To clarify guidelines for traffic safety research. M. Riipinen. HRIS 51. IRRD 607249. ACTIVE

(57) Study on Bicycle Riding. To study the behavior, opinions and use of light traffic lanes by cyclists. L. Oranen, J. Saarinen. HRIS 52. IRRD 607250. ACTIVE

(58) Safety Equipment and Condition of Bicycles. To examine bicycle reflectors, brakes, etc., in schools and work places and interview riders about their opinions and attitudes. L. Oranen, M. Koivurova. HRIS 53. IRRD 607251. FUTURE

8. UNIVERSITY OF HELSINKI: Ritarikatu 5, 00170, Helsinki 17.

b. Department of Psychology: Same address.

(1) Safety Margins When Passing a Pedestrian and a Cyclist. An analysis of driver behavior when passing a pedestrian or a cyclist on the roadside as a function of the traffic situation and road conditions, including road width. H. Summala. HRIS 52. IRRD 606519. (Citations) ACTIVE

(2) Drivers' Steering Reactions in an Unexpected Situation. To measure drivers' steering reactions when unexpectedly exposed to an obstacle on the road. H. Summala. HRIS 52. IRRD 606520. ACTIVE

(3) Risky Drivers and Maneuvers. To predict future accident involvement on the basis of risky maneuvers and travel and driver variables. H. Summala. HRIS 52. IRRD 606521. ACTIVE

11. TAMPERE UNIVERSITY OF TECHNOLOGY, ROAD AND TRAFFIC ENGINEERING Tieteenkatu 21, 33720 Tampere 72.

(20) Turf Ash in Stabilization and in Asphalt Pavement Fillers. To stabilize turf ash with lime, cement and cement activated ground blast furnace slag. S. Sauni, O. Hartikainen. HRIS 62. IRRD 607252. ACTIVE

(21) Active Vibration Isolation of the Operator's Seat in Off-Road Vehicles. To test the system of an electrohydraulic active isolation system for vibration control of the operator's seat which has already been designed. V. Iivonen, L. Siponen, T. Nurmi. HRIS 53. IRRD 607253. ACTIVE

12. FINNISH MOTOR INSURANCE BUREAU, TRAFFIC SAFETY COMMITTEE OF INSURANCE COMPANIES - VALT: Bulevardi 28, 00120, Helsinki 12.

(1) Country-Wide Survey of Traffic Accidents with Two or More Casualties. To collect, during several years, information on the most serious traffic accidents in Finland. HRIS 51. IRRD 606522. ACTIVE

12. (2) Survey of Traffic Accidents, Which Have Led to Personal Injuries, at the Investigation Centres in Joensuu, Rovaniemi and Lahti. To collect information for general traffic safety work, clear up driver background factors, compare driver conceptions with facts and illustrate the influence of certain matters on accident risks. HRIS 51. IRRD 606523. ACTIVE

(3) Survey of Autobus and Tramcar Traffic Accidents on Certain Street Sections in Helsinki. To obtain new information on factors which are connected with autobus and streetcar traffic accidents under city conditions. HRIS 51. IRRD 606524. ACTIVE

(4) Survey of Traffic Accidents at Crossings and Junctions of the Main Road No. 67 Between Seinajoki and Lapua. To collect information on traffic accidents at road crossings and junctions regardless of the seriousness of the accident. HRIS 51. IRRD 606525. ACTIVE

13. HELSINKI CITY TRANSPORT, Ilmarintori 1 B, 00240, Helsinki 24.

(1) Compiling of Service Level Standards for Public Transport. To compile service level standards in order to lend assistance to planning and decision making and make those processes more consistent. T. Riittinen. HRIS 16. IRRD 606526. (Citations) ACTIVE

(2) New Trolley Bus. To describe the characteristics of the prototype of a new 12M long trolley bus. P. Santaharju. HRIS 53. IRRD 606527. ACTIVE

14. HELSINKI CITY PLANNING OFFICE, TRAFFIC PLANNING DEPARTMENT Nilsiankatu 6, 00510, Helsinki 51.

(1) Congestion Study on the Main Roads of Helsinki City. To research the journey times and delays of private cars and identify the congestion points on the main roads of Helsinki. S. Haataja. HRIS 12. IRRD 606528. ACTIVE

(2) Safety in Crossing the Street in Helsinki. To make crossings safer for pedestrians by analyzing pedestrian accidents and behavior at different locations. A. Permala, V. Saresma. HRIS 51. IRRD 606529. ACTIVE

15. CITY OF ESPOO TRAFFIC PLANNING DEPARTMENT Kutojantie 1, 002630, Espoo 63

(1) Seasonal Variation in the Number of Passengers on Urban Buses in Espoo in 1977 - 1978. To reveal patterns of the seasonal variation in the number of passengers on urban buses in different areas and on various kinds of bus routes. L. Suolahti, J. Viinikka. HRIS 11. IRRD 606530. ACTIVE

(2) Variation Counts of Vehicle Traffic. To survey seasonal, weekly and hourly variations of traffic and get variation coefficients for different networks of roads and areas in Espoo. H. Kuronen. HRIS 55. IRRD 606531. ACTIVE

16. THE REGIONAL PLANNING ASSOCIATION OF NORTHERN SAVO (Pohjois-Savon Seutukaavaliitto): Vuorikatu 22, 70100, Kuopio 10.

(1) The Freight Transport Research of Northern Savo. To identify the most essential problems of freight transport in the area and find ways of solving them. J. Kohvakka. HRIS 13. IRRD 606533. ACTIVE

17. FINNISH METEOROLOGICAL INSTITUTE: Box 503, 00101, Helsinki 10.

(1) Development of Automatic Detection of Bad Weather Conditions. To develop a prototype system for detecting and warning of weather and driving conditions and their predictable changes. M. Makela. HRIS 21. IRRD 606534. ACTIVE

FINLAND (contd)

18. HELSINKI METROPOLITAN AREA COUNCIL: Sahkottajankatu 1, 00520, Helsinki 52.

(1) Computerized Data Bank for Public Transport Planning. To develop methods of storing data of public transport in Helsinki for planning purposes. P. Tuomola, R. Valtanen. HRIS 12. IRRD 607254. ACTIVE

(2) The Optimization of Energy Consumption in a Public Transport Network. To estimate energy consumption of a transportation system, test optimization methods and evaluate them for energy consumption. P. Tuomola, P. Heiskanan, HRIS 17. IRRD 607255. ACTIVE

(3) Study of Work Trips of the Bank of Finland Security Printing House. To find out changes in travel pattern and place of residence of employees of a firm which is moved from the CBD to an outlying area. L. Kalliopaa. HRIS 16. IRRD 607256. ACTIVE

19. MINISTRY OF THE INTERIOR (SM/KROS): 00130, Helsinki 13.

(1) Vehicle Traffic in Urban Planning. To draw up instructions for communes for planning vehicle traffic in urban areas. S. Hirvonen. HRIS 12. IRRD 607329. ACTIVE

FRANCE

Supplementary Survey - 1980

The 1980 supplementary survey of France was conducted through the cooperation of IRRD. A total of 62 new projects was reported, of which none is shown to be complete. Project reports were transmitted to the IRF by the British Transport and Road Research Laboratory, the English language documentation center for IRRD.

1. MINISTRY OF EQUIPMENT AND HOUSING (Ministere de l'Equipment et du Logement): 244 Boulevard Saint-Germain, 75 Paris 7e

c. Department of Technical Studies of Roads and Motorways (SETRA) (Service d'Etudes Techniques des Routes et Autoroutes): 46 Avenue Aristide Briand, F-92223, Bagneux.

(41) Study of Structural Safety. To use statistical probablistic methods for analysis of heavy vehicle traffic, a bridge loading model, a fatigue study and a study of the scale effect on safety of steel or concrete structures. M. Virlogeux, B. Jacob. HRIS 25. IRRD 500899. ACTIVE

(42) Design of Old Masonry Structures. To study the stability of an arch using ultimate design method. The results of the research will be used to develop a computer program comparing results with existing design methods. J. Delbecq, J. Michotey. HRIS 25. IRRD 500900. ACTIVE

(43) Optimum Strategy for Pavement Structures. To define the optimum cost distribution between initial investment and outside benefits by studying problems of structure and surfacing design, and maintenance, considering types and combinations of axles. J. Bouzigues, G. Caroff, C. Peyronne. HRIS 24. IRRD 500901. ACTIVE

(44) Social and Economic Effects of Road Investments. A study of the various effects of new road construction, particularly the economic and environmental effects. A. Spake, C. Duchene. HRIS 15. IRRD 500902. ACTIVE

d. Institute of Transportation Research (Institut de Recherche des Transports) Avenue du General Malleret-Joinville 2, F-94114, Arcueil CEDEX

(218) Use of the Transport Budget. A study of methods of allocating urban transport resources between municipalities, considering tax and non-tax sources as well as opinion input from local and regional authorities. P. Dutoya. HRIS 14. IRRD 501327. ACTIVE

(219) Parking Policy and Modal Choice. A study to define the effects of parking problems on transit modal choice and mobility habits. J. Orfeuil, F. Potier, J. Degard. HRIS 15. IRRD 501328. ACTIVE

(220) Energy Budget and Urban Transport. A study to determine an energy budget caused by household journeys, particularly with regard to zone of residence and demographic and socioeconomic household characteristics. J. Orfeuil. HRIS 17. IRRD 501329. ACTIVE

(221) Weekend Journeys. A detailed study of the importance of weekend journeys and the elasticity of these journeys following a rise in energy costs. F. Potier. HRIS 16. IRRD 501330. ACTIVE

(222) Performance of an Urban Network. To define and study the performance parameters which affect the performance of an urban network for improvement of forecasting methods. O. Desforges. HRIS 55. IRRD 501331. ACTIVE

(223) Collection of Data on Urban Road Traffic. To improve or develop urban traffic data collection and to define a consistent plan of measures for urban areas. O. Desforges. HRIS 55. IRRD 501332. ACTIVE

1. d. (224) Road Information. To examine how much road information as of today can be improved and consider new methods of communicating with drivers. Y. David. HRIS 16. IRRD 501333. ACTIVE

(225) Index Incorporating the Various Effects of Traffic on the Environment. Statistical links between qualitative and quantitative traffic nuisances must be analyzed, and a few environmental descriptions must be defined and regrouped in an environmental index. M. Maurin. HRIS 17. IRRD 501334. ACTIVE

(226) Discomfort Due to Rolling Noise. A study of tires and non-skid surfacings to reduce discomfort to occupants of nearby frontages from rolling noise. M. Vernet. HRIS 17. IRRD 501335. ACTIVE

(227) A Study of Fuel Consumption and Nuisances by Means of Refined Traffic Studies. To obtain a better knowledge of the speed distribution and acceleration of various categories of vehicles for the study of energy consumption and nuisances. S. Cohen. HRIS 17. IRRD 501336. ACTIVE

(228) A Study of Fuel Consumption and Nuisances by Means of Refined Traffic Studies. Measurements of the fuel consumption of light vehicles in various highway classifications with speed limits considered, and information will be gathered on heavy vehicles on various classes of roads. J. Roumegoux. HRIS 17. IRRD 501337. ACTIVE

(229) Influence of Urban Traffic Improvements on the Fuel Consumption of Light Vehicles. A thorough study will be made on several types of traffic improvement, both short and long length, and the effect on traffic flow, average speed and fuel consumption from which a mathematical model will be derived. J. Romegoux, C. Fouilloux. HRIS 17. IRRD 501338. ACTIVE

(230) Survey on Car Use. Car use in France will be analyzed with a view to evaluating savings in fuel by means of possible actions on the design, maintenance and use of motor vehicles. C. Lamure, J. Delsey, M. Vallet. HRIS 17. IRRD 501339. ACTIVE

(231) Reduction Factors for Motorized Mobility. To study how household use of vehicles could be modified, to research alternate transport modes, ie walking, 2 wheeled vehicles, and possible use of telecommunications in lieu of transport for energy savings. X. Godard. HRIS 15. IRRD 501340. ACTIVE

(232) Stabilizing Articulated Vehicles in Reverse. A study of means such as an automatic pilot and closed television circuit to improve mobility in reverse of articulated vehicles. A. Clerc, B. Vors. HRIS 53. IRRD 501326. ACTIVE

e. Road and Bridge Laboratories (Laboratoires des Ponts et Chaussees): 58 Boulevard Lefebvre, F-75732 Paris Cedex 15

(926) In-Situ Measurements of Pavement Thicknesses. To determine the thickness of asphaltic or stabilized gravel wearing and base courses by non-destructive Penetradar device to determine if this can replace coring. A. DuMesnil, J. Gramsammer. HRIS 34. IRRD 500879. ACTIVE

(927) Behavior of Deteriorated Pavements. To understand the evolution in the deterioration of a pavement, and to evaluate the risks for the user, beginning with semirigid pavement structures only. J. Marchand, R. Kobksh. HRIS 24. IRRD 500880. ACTIVE

1. e. (928) Structure and Micromorphology of Bituminous Binders Modified with Polymers. The objective is to study the mix-design/structure/properties and their relationship of bituminous binders modified with polymers. B. Brule. HRIS 31. IRRD 500881. ACTIVE

(929) Study of Cracking in Bituminous Mixtures. To inventory unexplained cracking in bituminous pavement with purpose of seeking cause of phenomena. Chanut. F. Moutier. HRIS 31. IRRD 500882. ACTIVE

(930) Laboratory Study of the Factors Influencing Coating. To define the optimum binder content for satisfactory coating by means of evaluating physio-chemical characteristics of the fine aggregate. M. Huet. J. Vecoven, N. Tran. HRIS 31. IRRD 500883. ACTIVE

(931) Development of an Accelerated Method of Studying Materials Stabilized with Hydraulic Binders. To find a method of accelerating the hardening of gravel or sand stabilized with hydraulic binders, initially by testing various steam curing cycles. M. Kergoet. HRIS 62. IRRD 500884. ACTIVE

(932) Incorporation of Textile Fibers in Road Materials. To evaluate the strengthening effect of incorporating textile fibers in road materials and to seek a flexible manufacturing and spreading method with existing equipment. M. Khay, Colombier. HRIS 62. IRRD 500885. ACTIVE

(933) Waste Embankments and Tips.Integration in the Environment. To study the use of waste embankments and tips as to stability, the landscape and pollution. D. Puiatti, A. Quibel, P. Devaux, G. Arnal, J. Louvrier. HRIS 17. IRRD 500886. ACTIVE

(934) The Use of Iron Sulphate in Road Bases. To study the stabilizing and environmental effects of iron sulphates when added to aggregates containing slag. J. Colombel, P. Devaux. HRIS 62. IRRD 500887. ACTIVE

(935) Laying of Materials with a Low Moisture Content. To improve existing knowledge of compacting soils under scarce water conditions with emphasis on type of equipment needed and layer thickness. A. Quibel. G. Morel. A. Schaeffner. HRIS 33. IRRD 500888. ACTIVE

(936) Micropiles. First used as under pinning for foundations this study will research methods of installation and study their behavior with control piles and measurements previously made. F. Cadilhac. HRIS 63. IRRD 500889. ACTIVE

(937) Spreading of Prestress. To determine the real length of prestress spreading and its distribution in box girders by examination of different design methods, existing experimental data and definition and conduct of tests on structures. Dantec, Palombi, B. Halphen. HRIS 25. IRRD 500890. ACTIVE

(938) The Non-Destructive Testing of Masonry Bridges. To develop a technology for non-destructive testing of engineering structures and verification of non-destructive testing for masonry works. J. Bastet, A. Lootvoet. D. Angot. HRIS 25. IRRD 500891. ACTIVE

(939) Night Visibility of Signalization Devices in the Road Environment. To improve road safety at night by gaining a better knowledge of photometric characteristic of various signalization devices and their impact on various drivers. G. Gratia, Fritsch, J. Schlachter. HRIS 52. IRRD 500892. ACTIVE

1. e. (940) Traffic Study. To develop traffic study systems using both existing and new methods which will yield a desired given performance under rural and urban conditions. M. Siffert, A. Blanchard, X. Cledat De La Vigerie. HRIS 55. IRRD 500893. ACTIVE

(941) Safety Fences. To improve the efficiency of fences through their installation and maintenance, including static and various other tests. J. Terle, P. Lefevre, Y. Charonnat. HRIS 25. IRRD 500894. ACTIVE

(942) Tests on the Application of Regulation Texts. To conduct a follow up study on quality control of concrete regulations relating to installation of prestressing units and to use the data and results obtained. P. Jaques. HRIS 32. IRRD 500895. ACTIVE

(943) Numerical Treatment of Continuous Measurements. To develop a method for collection, storage and interpretation of continuous data supplied by non-destructive nuclear logging measurements. J. Peybernard, J. Gorse. HRIS 34. IRRD 500896. ACTIVE

(944) Interfaces. To make an inventory of dissimilar equipment systems where they interface, particularly automatic control systems on construction equipment. J. Bressange, S. Savoysky, M. Rabechault. HRIS 41. IRRD 500897. ACTIVE

f. Urban Transport Study Center: Avenue d'Aristide Briand 8, F-92220, Bagneux

(12) Working Drawings of Vehicle Turning Movements. To develop a computer program for determining and tracing the turning movements of various vehicles in the form of a catalog. G. Dubois Taine, M. Nguyen Van Phong. HRIS 53. IRRD 501341. ACTIVE

(13) The Safety of Lanes Reserved for Public Transport. An investigation of the safety of reserved lanes, particularly in a counter-flow condition, for various transport modes. M. Pierron, A. Douvier. HRIS 54. IRRD 501342. ACTIVE

(14) Design of Roads Networks in NA Zones (In a Natural State at the Present Moment). Planning of road networks in non-urbanized zones where zoning codes at present permit development, but not yet construction. G. Dubois Taine. HRIS 12. IRRD 501353. ACTIVE

15. NATIONAL ROAD SAFETY ORGANIZATION (Organisme National de Securite Routiere): Avenue du General Malleret-Joinville 2, F-94114, Arcueil CEDEX

(328) Multi-Disciplinary Approach to Primary Safety. By use of various specialties involving the accident site, the vehicles, the drivers and witnesses, a survey strategy will be evolved resulting in later collection of complete data on accidents studied. F. Ferrandez. HRIS 51. IRRD 501347. ACTIVE

(329) Regulations Concerning the Minimum Age for Obtaining a Car Driving Licence. To study the legislative and administrative authorities of various countries where minimum driving age permits vary to consider the implications of actual aptitude. S. Delaunay, C. Tetard. HRIS 70. IRRD 501348. ACTIVE

(330) Styles of Perception: Relation with Traffic Safety. To verify the existence of different styles of awareness among drivers by using principles and indices of dependence on and independence from the field of awareness, and this relation to accidents. R. Rozestraten. HRIS 52. IRRD 501349. ACTIVE

15. (331) Driving Behavior of Truck Drivers under Present Traffic Conditions. To reach solutions to traffic problems arising from the different characteristics of the vehicle and the contradictory behavior of drivers where trucks are involved. P. Hamelin, J. Carre. HRIS 52. IRRD 501350. ACTIVE

(332) Social Relations with Manufacturers, Working Conditions and Regulations Applying to Truck Drivers. To describe the conflicts with the socio-economic operation of the road transport industry with the economic operation as defined in the Guilaumat report. P. Hamelin, J. Carre. HRIS 70. IRRD 501351. ACTIVE

(333) Contribution to the Methods of Analyzing the Lack of Safety in Urban Zones. A study directed toward the idea of risk expressed by need to pay special attention or passivity as expressed by fatalism by drivers along some urban routes and junctions. G. Malaterre, N. Muhlrad, F. Saad. HRIS 51. IRRD 501352. ACTIVE

(334) Research into General Methods of Accident Analysis in Urban Areas. The objective of the work is to consider general methods of accident analysis with a view to defining a general policy of measures for improving safety. F. Ferrandez, D. Fleury, J. L'Hoste. HRIS 51. IRRD 501353. ACTIVE

(335) Experimental Studies of Variable Message Signs. To study the most suitable character shapes and type of equipment (optical fibers, lamp and electrostatic slat matrices) for variable message signs. D. Moukhwas. HRIS 54. IRRD 501354. ACTIVE

(336) The Problem of Restraining Heavy Vehicles. To study the structural elements of vehicles affecting the design of fences and to determine objectives as regards restraint; to study possible modifications of specifications for ordinary safety fences. B. Chretien. HRIS 21. IRRD 501355. ACTIVE

(337) Offenses and the Law. A Legal Approach to Traffic Rules Status. To study elements of driving rules which receive greater weight from the drivers, and legal concepts as they are applied by the authorities controlling and punishing traffic offenses. M. Moget. HRIS 70. IRRD 501356. ACTIVE

(338) The Wearing of Safety Belts: Research on Problems of Acceptance. To study the technical and psychological problems hindering the required use of seat belts including the geometric position of the belt as a function of anthropometry and ergonomy. G. Michant, M. Dejeammes, R. Biard, Y. Derrien. HRIS 51. IRRD 501357. ACTIVE

(339) The Safety of Children in Vehicles: Practices and Attitudes. An investigation of the physical and psychological problems involved in the use of child restraint systems including parents attitude for childs safety and the motivation and resistance aspects. B. Ocio, J. Carre, M. Dejeammes, R. Briard. HRIS 51. IRRD 501358. ACTIVE

(340) The Use of Mathematical Models in Studies of Restraint Systems. The aim of the research is to conduct an in-depth study of the dynamic behavior of the occupant/restraint device systems using mathematical models. M. Dejeammes, F. Martin. HRIS 51. IRRD 501359. ACTIVE

(341) Protection of Heavy Vehicle Occupants. To study ways of providing protection to heavy vehicle drivers, probably by an adaption of the safety belt used in light vehicles. M. Dejeammes, R. Briard. HRIS 51. IRRD 501323. ACTIVE

15. (342) Anthropometric Dummy and Side Impacts. To define and design mechanical systems to be integrated into dummies to improve their performance when they are subjected to side impacts. J. Cotte. HRIS 51. IRRD 501324. ACTIVE

(343) Evaluation of Driver Visual Capacity. To define drivers of France in terms of visual ability by seeking out vision testing equipment for this purpose and to predict effect of defective vision on driving. F. Lecret. M. Neyround. HRIS 52. IRRD 501325. ACTIVE

17. BUILDING AND PUBLIC WORK RESEARCH CENTER (Centre Experimental d'Etudes et de Recherches du Batiment et des Travaux Publics): Rue Brancion 12. F-75737 Cedex 15. Paris.

(133) Behavior of Structures under Concentrated Loads: Study of the Effect of Coupling Devices. To analyze the cause of concrete cracking in the vicinity of coupling devices used the construction of bridges prestressed by sections concreted successively. M. Kavyrchine. HRIS 25. IRRD 500903. ACTIVE

(134) Tipping of Reinforced and Prestressed Concrete Girders and Posts. To complete experimental results obtained on stability problems such as tipping on large span precast prestressed deck sections and very high piers. M. Kavyrchine. HRIS 25. IRRD 500904. ACTIVE

48. AUTOMOBILE AND MOTORCYCLE INDUSTRIES TECHNICAL ASSOCIATION (Union Technique de l'Automobile du Motorcycle et du Cycle. UTAC): Rue Lecourbe 157-159. F-75015 Paris

(36) Analysis of Particles in Engines. To develop a method of determining the mass distribution of particles especially in diesel engines. H. Le Guen. J. Roth. J. Favennec. HRIS 53. IRRD 501344. ACTIVE

(37) Measurement of the Fuel Consumption of Commercial Vehicles. To develop a method of measuring the fuel consumption of commercial vehicles on a rolling bench. J. Roth. J. Husson. HRIS 53. IRRD 501345. ACTIVE

(38) Injuries to the Face Caused by Windshields. To determine the influence of the design and construction characteristics (glass or plastics) on cuts to the face. J. Joly. C. Burzynski. HRIS 51. IRRD 501346. ACTIVE

GERMANY

Resurvey - 1980

The 1980 resurvey in Germany was conducted through the cooperation of IRRD. A total of 970 projects is reported, of which 144 are reported for the first time. Of the total 381 are shown to be complete. Project reports were transmitted to the IRF by the British Transport and Road Research Laboratory, the English documentation center for the IRRD.

1. FEDERAL HIGHWAY RESEARCH INSTITUTE (Bundesanstalt Fuer Strassenwesen-BAST): Bruehler Strasse 1, Postfach 510530, D-5000 Koeln 51.

(1) Protection from the Effects of Wind on Road Traffic. To devise methods to protect vehicles from high winds, particularly on bridges. D. Lebek, Caspar. HRIS 21. IRRD 700400. ACTIVE

(2) Accelerated Weathering Tests on Traffic Signs. Study of various specimens including reflectorized material, under different climatic conditions and in the laboratory. Bischoff. HRIS 34. IRRD 700401. COMPLETE

(3) Testing of Nuclear Densitometers for the Determination of Density and Moisture Content. To check the relative performance of new methods and their suitability for site use. (With the Technical University of Darmstadt). H. Behr. HRIS 34. IRRD 700402. ACTIVE

(10) The Performance of Modern Road Structures Under Traffic. Tests of present condition of bases and structural layers. P. von Becker, P. Sulten. HRIS 24. IRRD 700404. COMPLETE

(28) Measuring the Bond Strength and Resistance to Wear of Paints and Materials for Carriage-way Marking. To develop a laboratory test apparatus to predict performance. Friedrich. HRIS 34. IRRD 700410. ACTIVE

(39) Use of Various Stone Fillers in the Production of Macadam for Fine Asphalt Wearing Courses, having Particular Regard for Durability under Traffic and Climatic Effects. Laboratory and road tests using several varieties of stone fillers in order to establish regulations on their use in road surfaces. U. Halfmann. HRIS 31. IRRD 700415. COMPLETE

(41) Investigation of Existing Lighting on Motorways as Regards Illumination and Cost. Lighting characteristic will be studied on test sections in actual use instead of in the laboratories as heretofore. G. Schreiber. HRIS 51. IRRD 700417. ACTIVE

(42) Study of Transparent Traffic Signs to Establish Technical Conditions for their Supply and Testing. To draft precise regulations covering the construction, illumination and erection of transparent road signs. G. Schreiber. HRIS 54. IRRD 700418. ACTIVE

(50) Study of Darmstadt-Heidelberg Concrete Test Section. Measurement of axle loads temperatures, stresses, etc., under loads and observation of cracks, distortions, etc. on test sections built without reinforcement and expansion joints in 1968. (With State Road Office Hesse). F.O. Schuster, G. Bau, H. Buseck, H. Keller, K.-H. Lenz, H. Meyer, J. Eichberg, H.J. Horner. HRIS 24. IRRD 700421. ACTIVE

(52) The Possibility of Using Heat Insulating Courses in Road Construction. Study of materials and application of insulating courses in place of thick frost-protecting layers of gravel. H. Behr. HRIS 62. IRRD 700422. COMPLETE

1. (55) Study of the Requirements of DIN 1955 in Respect of Instruments and Test Methods. (Bituminous Binders). Causes of differences in performance of bituminous binders of different origins. P. Schaedel, U. Halfmann. HRIS 31. IRRD 700424. ACTIVE

(66) Functional and Operational Testing of Noise-Absorbing Protective Walls with a View to Their Use on Roads. Tests of two types of wall systems to determine: 1) the level of noise reduction achieved in practice, 2) the residual reflection of various designs after long use, 3) the effects of weathering, dirt on the road and deicing salts, 4) the influcence of the walls on traffic. G. Reinhold. HRIS 17. IRRD 700427. ACTIVE

(77) Measurement of Salt Content on Roadways and of Soil Salting Adjacent to a Highway. Determination of sodium and chloride ion concentrations on roadways and in soil specimens from alongside the autobahn, and an investigation into the extent to which plant damage can be prevented by chemical means. P. Schaedel. HRIS 40. IRRD 700436. ACTIVE

(78) Improvement of the Determination of Identity of Marking Pigments and Substances. Test of the applicability of pyrolysis to the determination of the identity of marking materials and preparation of a reproducible method of analysis using gas chromatography, infrared spectography, as well as thin-film chromatography. P. Schaedel, H. Gartner. HRIS 34. IRRD 700437. ACTIVE

(84) Use of Trinidad or Rubber Additives for Fine Asphalt Pavements. Construction and observation of test sections of asphalt pavement using additives intended to improve service-ability and prolong life, observing performance under traffic and variable weather conditions together with measurements of wear, anti-skid properties and deformations. U. Halfmann. HRIS 34. IRRD 700441. ACTIVE

(85) Mastic Asphalt Pavements with Different Binder Compositions on Newly Constructed Sections. Observations at various test sections of mastic asphalt courses during construction and under traffic, determining wear, rut formation and the influence of weather conditions. U. Halfmann. HRIS 24. IRRD 700442. ACTIVE

(86) Measuring the Light Reflectiveness of Road Surfaces. Development of an instrument for measuring the degree of light reflectiveness of road surfaces in different conditions. HRIS 21. IRRD 700014. ACTIVE

(87) Plastic Coatings on Concrete Roads. Application of various synthetic resins to concrete pavements in an assessment of the effectivenss of plastic coatings with observations on durability, resistance to wear and behavior under traffic. HRIS 34. IRRD 700022. COMPLETE

(89) Behavior of Various Coating Methods for Bridge Concrete. Systematic study of conditions to be fulfilled for successful application of bridge deck concrete coatings, in order to prevent peeling of the coating and frost damage, the study to include composition of the concrete, the after-treatment, treatment of the concrete surface before coating application, techniques of application and materials used. HRIS 34. IRRD 700025. ACTIVE

(93) Alternative-Direction Signs in Connection with a New Direction System for Motorways. Studies for the determination of the technical and economic limits of a supplementary direction sign system which, in the event of congestion, will control the traffic through alternative route diversion according to the capacity available. HRIS 54. IRRD 700049. ACTIVE

GERMANY (contd)

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(94) Grade-Separated Junctions on Two-Lane Rural Roads. Use of speed measurements, accident analyses, calculations of capacities and economic factors in an assessment of the suitability of grade-separated junctions on two-lane roads, together with establishment of criteria for application, suitable draft elements and recommendations, if the assessment is positive. HRIS 55. IRRD 700050. ACTIVE

(97) Filter Stability of Frost Blankets. Use of model tests, in which frost blanket materials of different composition and with different subsoil conditions are subjected to dynamic loading tests, in verifying whether the requirement for hydraulic filter stability in accordance with Terzaghi's filter rule is justified for frost blankets. HRIS 62. IRRD 70071. COMPLETE

(99) Usability of Soils with Organic Constituents. Laboratory tests on organic soils to find shear strength, compressibility and compactibility, in order to determine whether and in what condition an organic soil can be left as a foundation under embankments or used as embankment material. HRIS 62. IRRD 700076. COMPLETE

(105) Use of Mixed Salts to Prevent Formation of Black Ice. Tests of the de-icing effectiveness of various mixtures in efforts to decrease amounts used for environmental reasons, and to attain operational improvement and cost savings. HRIS 40. IRRD 700136. ACTIVE

(106) Equipment for Mechanized Road Maintenance. Formulation of test requirements for maintenance equipment including preparation of duty manuals, development of test methods and technical test conditions, together with tests of types of equipment anticipated in suitable areas. HRIS 41. IRRD 700137. ACTIVE

(107) Traffic Engineering Effect and Possible Use of Congestion Warning Systems. Tests of existing congestion warning system installations to see if they are suitable for giving timely warnings in different congestion situations and causing road users to adapt their driving speed accordingly. HRIS 54. IRRD 700138. ACTIVE

(109) Influence of Lighting of the Emscher Expressway on Traffic Flow. Tests to determine if traffic, redistributed from unlit parallel roads onto the lit section of the Expressway, has alterations in driver behavior, journey time or traffic composition, or if accidents can be expected as a result of the lighting and its intensity. HRIS 54. IRRD 700140. ACTIVE

(111) Dependence of Traffic Noise on Traffic Characteristics and on Operational Condition of Vehicles. A study of the dependence of road traffic noise on traffic characteristics, gradient and road surface so that recommendations for the evaluation and forecasting of the noise level which can be prepared. HRIS 17. IRRD 700142. ACTIVE

(113) Permeability of Frost Protection Gravels. Studies to determine whether strict specification requirements are justified, the studies to determine the permissible limits of particle composition with respect to permeability and drainage action, together with comparisons of gravel/sands and gravel mixtures to broken stone. HRIS 35. IRRD 700164. ACTIVE

(114) Moisture Content in the Subgrade and Subsoil of Roads with a Flexible Structure and Roads with Heat Insulating Courses. Accurate measurements of moisture content on existing experimental roads to determine the effect of flexible construction and heat insulating courses. HRIS 62. IRRD 700165. ACTIVE

1. (115) Evaluation of German and Foreign Research Work and Practical Experience on the Use of Aggregates in Roads. An evaluation of completed research and test reports on the behavior of aggregates under traffic in both normal and experimental roads, together with an evaluation of completed research reports on laboratory tests. HRIS 35. IRRD 700169. COMPLETE

(116) Experimental Road with Surfaces Resistant to Studded Tires. Observations on experimental sections with different types of surfaces, under varying conditions of weather and traffic to determine resistance to the action of studded tires. HRIS 24. IRRD 700178. ACTIVE

(117) Continuously Reinforced Concrete Pavements Constructed Without Removal of the Existing Subgrade. Measurements of longitudinal compressive stresses in continuously reinforced pavements, correlated to the temperature and joint movement, and compared with the results of tests on a pavement without expansion joints. HRIS 32. IRRD 700107. ACTIVE

(123) Testing of Passive Protective Equipment for Roads. HRIS 54. IRRD 700586. COMPLETE

(124) Study of Snow Protection Installations. HRIS 40. IRRD 700587. ACTIVE

(125) The Spread of Traffic Noise in Non-Built-Up Areas: Dependence on Ground Absorption, Height Above Ground Level, Position of the Road with the Terrain. HRIS 17. IRRD 700588. ACTIVE

(126) Planning of Standard Tests to Examine the Wear of Road Surfacings in the BAST Drum Test Rig. HRIS 24. IRRD 700594. ACTIVE

(127) Random Counts of Axle Loads of Road Freight Transport as a Means of Determining the Load on the Road Network. HRIS 55. IRRD 700595. ACTIVE

(128) Experimental Study of the Number of Expansion Joints Required on Both Sides of Engineering Structures. HRIS 25. IRRD 700619. ACTIVE

(129) Measurement of Imperfections in Steel Bridges. The use of photogrammetric methods to measure such imperfections as weight and thickness tolerances. D. E. Lebek. HRIS 25. IRRD 700841. ACTIVE

(130) Measurement of Differences in Temperature in Steel Bridges. To determine if design assumptions in the standards for calculating temperature effects are realistic. D.E. Lebek. HRIS 25. IRRD 700842. COMPLETE

(131) Measurement of Wind Resistance Factors in Connection with Wind Protection Measures in Bridge Construction. Wind tunnel experiments to determine wind resistance values related to conventional bridge design. D. E. Lebek. HRIS 25. IRRD 700843. ACTIVE

(132) Investigation of Structures to be Removed from the A10 and A15. To determine the chloride concentration in concrete due to use of de-icing salts. D. E. Lebek. HRIS 25. IRRD 700844. ACTIVE

(133) Wind Protection Measures on Roads and Bridges. To determine the effects of, and protective measures against, the side winds on high structures as related to drivers' safety. D.E. Lebek. HRIS 21. IRRD 700845. ACTIVE

(136) Study of the Efficiency of Snow Ploughs in Relation to Snow Characteristics. HRIS 41. IRRD 701439. ACTIVE

(137) Road Traffic Noise in Tunnels and at Tunnel Entrances: Effect of Noise-Absorbing Cladding. HRIS 17. IRRD 701447. ACTIVE

1. (138) Quality of Road Surfaces Which Can Be Attained. HRIS 24. IRRD 701458. ACTIVE

(140) Influence of Concrete Mix Design on the Skidding Resistance of the Carriageway (Laboratory Tests on the Internal Drum Test Rig). HRIS 24. IRRD 701529. ACTIVE

(141) Analysis of Vibrations From Road Traffic and Construction Sites, and Its Propagation. HRIS 17. IRRD 701536. ACTIVE

(142) Studies of Exhaust Fumes Concentrations With Reference to Traffic Data. HRIS 17. IRRD 701537. ACTIVE

(143) Development of a Method of Establishing Causes of Damage Which Uses NonDestructive Methods of Measurement. HRIS 34. IRRD 701538. ACTIVE

(144) Computer Studies of the Effects of Temperature Stress of Steel Bridges During the Laying of Bituminous Surfacings. HRIS 25. IRRD 700986. ACTIVE

(145) Studies of the Temperature and Deformation Behavior of High Bridge Piers. HRIS 25. IRRD 700987. COMPLETE

(146) Computer Studies of Damage to Joints on Prestressed Concrete Bridges. Melhorn. HRIS 25. IRRD 700988. ACTIVE

(147) Tests of Methods of Determining Stress and Strain Collectives. HRIS 25. IRRD 700989. ACTIVE

(148) Analysis of the Desired State of Traffic Education at all Levels in the Federal Republic of Germany. A comprehensive survey of all principles relating to traffic education to form a total conceptual notion for traffic education in institutions. W. Beecher, K. Reiter, P. Baerenz. HRIS 51. IRRD 701323. COMPLETE

(150) Action and Behavior of a Bituminous Surfacing Having De-icing Salts Mixed into It. HRIS 40. IRRD 701626. ACTIVE

(151) Road Traffic Noise at Junctions Provided with Built-up Boundaries. HRIS 17. IRRD 701637. ACTIVE

(152) In-situ and Model Studies on the Influence of the Shape of Trough Sections, Earth Walls and Housing Units on Protection against Road Traffic Noise. HRIS 17. IRRD 701638. ACTIVE

(153) Effect of Noise Protection Measures on the Ease, Fluidity and Safety of Flowing Traffic. HRIS 17. IRRD 701639. ACTIVE

(154) Long-Term Observations on Selected Sections of Road, Part 2. HRIS 24. IRRD 701654. ACTIVE

(155) Determination of the Adhesion of Car Tires to Variously Weathered Surfaces of the BAST Internal Drum Test Rig. HRIS 24. IRRD 701656. ACTIVE

(156) Computer Study of Stress in Massive Bridges as a Result of Heat of Hydration. Determine time-related distribution of temperature and resulting time related stress distribution due to heat of hydration. W. Fense, G. Mehlhorn. HRIS 32. IRRD 700264. ACTIVE

(157) Corrosion of Weather-resistant Steels Subjected to Stress by Deicing Salt on Roads. To examine the effect of chlorides on the formation of the corrosion inhibiting surface layer of weather-resistant steel. S. Sczyslo, W. Hein. HRIS 34. IRRD 700365. ACTIVE

1. (158) Durability of Surfacings on Steel Bridges with Orthotropic Carriageway Slabs. Study of the use of plastics adhesives between bituminous surfacings and the steel deck of orthotropic bridges. H. Uhl, S. Sczyslo. HRIS 34. IRRD 700266. ACTIVE

(159) The Attainable Decrease in the Rolling Noise of Tires. A study of the possibilities of reducing rolling noise in tires, both on new tire and surfacing types, as well as on current types. HRIS 53. IRRD 700776. ACTIVE

(160) Grooves in Road Surfacings to Improve Tire-Road Contact in the Wet. A study of the effectiveness, drawbacks and comparisons of this grooving. HRIS 24. IRRD 701793. ACTIVE

(161) Determination of a Basis for Evaluating Rut Depths. To determine statistics on rutting of Federal main roads and evaluate findings with respect to traffic safety and comfort. HRIS 24. IRRD 701794. ACTIVE

(162) Relation Between the Deformation Moduli of the Frost Blanket and its Base. Testing, under laboratory conditions, of such parameters of the problem as base stiffness, particle size, degree of compaction, thickness of frost blanket. HRIS 64. IRRD 701908. ACTIVE

(163) Properties of Mixtures of Soil and Waste Material and Mixtures of Waste Materials, and Binders. To examine the improvement and stabilization of natural soils with industrial by-products such as fly ash and slag sands as well as with refuse inceneration and hydraulic binders. HRIS 62. IRRD 701909. ACTIVE

(164) The Occurence, Causes and Prevention of Permanent Deformations in Bituminous Road Pavements. To establish permanent deformations, together with material properties of various layers of the road structure and workout recommendations for decreasing these deformations, with permanent deformation being defined. In cooperation with laboratories in other countries. HRIS 24. IRRD 701924. ACTIVE

(165) Determination of Thermally Conditioned Modifications to Binders. To examine the extent to which a new test procedure has been effective and show if there is a relation between test values and behavior of the binder. HRIS 31. IRRD 701925. ACTIVE

(166) Concentration of Exhaust Fumes in Relation to the Position of Roads and Vegetation alongside Roads where there is Intermittent Building. To measure exhaust fumes under such varying conditions height of road above terrain, road alignment and inclination of walls of cuttings, density and height of vegetation, and distance from vegetation from road edge. HRIS 17. IRRD 701935. ACTIVE

(167) The Spreading of Exhaust Fume Concentrations in Relation to Atmospheric and Meteorological Conditions. Examination of air temperature, humidity and pressure, wind speed and direction, as basis for developing a diffusion model. HRIS 17. IRRD 701936. ACTIVE

(169) Evaluation of Official Road Traffic Accident Statistics for the Period January 1, 1975, to December 31, 1979 with Respect to Overall Accident Trends on Motorways and Other Roads Outside of Built-up Areas. An evaluation with particular reference to the effect on accidents of the increase in maximum speed limit for buses and the changes in bus behavior. E. Briehning, L. Hippenchen. HRIS 51. IRRD 702324. ACTIVE

1. (170) Measurement of Temperature Differences in Concrete Bridges. To provide long and short term information on temperature stresses of bridge sealing materials and bridge decks during the laying of bituminous surfacings and the temperature stressing of the deck due to weather effects. D. E. Lebek. HRIS 25. IRRD 702325. ACTIVE

New Projects

(171) Corrosion Protection Systems on Steel Bridges on Federal German Main Roads. A survey of the state of the art and performance of corrosion protection systems on steel bridges. Nakkel. HRIS 34. IRRD 702392. (Citations) COMPLETE

(173) Determination of Impact Damage Sustained at Dual Rail Crash Barriers and Parapets on Bridges on Federal German Main Roads. Evaluation of a Survey Carried Out Among the County Road Construction Authorities. A study of data collected over three years of impact damage sustained at crash barriers on bridges pertaining to durability and effectiveness of the devices. HRIS 25. IRRD 702394. COMPLETE

(174) Propagation of Nitrogen Monoxide and Dioxide and its Percentage Composition in Relation to Parameters Specific to Roads and Traffic and to Meteorlogical Factors. The main aim is to determine concentrations of harmful pollutants near the roads. Investigators. HRIS 17. IRRD 702103. ACTIVE

(175) Causes of Driving in the Wrong Direction (Counter to the Flow of Traffic) on German Motorways, and Working out a Means of Improvement. To investigate the causes of wrong way driving errors by making a study of areas where these errors may be initiated. Investigators. HRIS 52. IRRD 702104. ACTIVE

(176) Development and Testing of Guidance Equipment for Driving in Fog, with Stage Surveillance. An experimental road dividied into sections equipped with matrix signs, visibility distance measuring equipment and traffic counters is to be set up and tested with a view to providing guidance for drivers in fog. Investigators. HRIS 21. IRRD 702090. ACTIVE

2. FEDERAL LABORATORY FOR TESTING MATERIALS (Bundesanstalt Fuer Materialpruefung-BAM): Unter den Eichen 87, D-1000 Berlin

(2) Rotatibility of Plastic Hinges in Reinforced Concrete Structures Subjected to Bending. Testing of some 28 slabs reinforced with different types of steel to determine rotatibility of plastic hinges. HRIS 25. IRRD 700726. COMPLETE

(3) Inelastic Behavior of Reinforced Concrete Sections and Structures. Experimental and mathematical determination of rotation properties of plastic hinges in structural elements subjected to bending and compressive stresses, and to compare rotational properties of individual elements. Eifler, Plauk. HRIS 25. IRRD 700929. COMPLETE

(6) Fundamental Study to Establish a National Standard for Couplings for Tubular Steel Scaffolding. HRIS 34. IRRD 701221. COMPLETE

(9) Effects of De-icing Salts on Reinforced Concrete Bridge Structures. Laboratory tests on concretes subjected to solutions of de-icing salts to determine nature and speed of entry of the salt into the concrete and possible structural changes in the concrete. Schimmelwitz. HRIS 40. IRRD 701365. ACTIVE

(10) Effect of Admixtures of Rubber to Gussasphalt Surfacings. HRIS 31. IRRD 701686. COMPLETE

2. (11) Electrochemical Corrosion Conditions in Prestressing Ducts - Significance for Stress Crack Corrosion of Prestressing Steels Before Injection. To examine the effect of environmental conditions and sliding sleeve conditions on corrosion in prestressing steels to see if suitable methods can be used to prevent damage beforehand. HRIS 34. IRRD 700267. ACTIVE

(12) Long-Term Behavior of Concretes Modified with Synthetic Resin. To obtain information on such concrete taking into account the effects of the mechanical properties of the concrete, possible structure modifications and durability. P. Schimmelwitz, M. Gierloff. HRIS 32. IRRD 701807. ACTIVE

(13) Working out of Testing Criteria for Concrete Bridge Seals using Prefabricated Scaling Strips. To produce a stress catalogue of requirements for sealing systems. HRIS 34. IRRD 701808. ACTIVE

4. DIRECTORATE OF CONSTRUCTION OF BAVARIA (Oberste Baubehorde in Bayern): Karl-Scharnagl - Ring 60, D-8000, Munchen 22

(1) Lime and Cement Stabilization of Frost Susceptible Soils. To evaluate effectiveness under traffic and weather. J. Scheiblauer. HRIS 62. IRRD 700451. ACTIVE

(2) Cement Stabilization of Subbase. Examination of the use of stabilized soil to replace the frost-protection layer (subbase). J. Scheiblauer. HRIS 62. IRRD 700452. ACTIVE

(7) Surfacing of Cohesive Soils with Plastic Films. To determine if a reduction in good bearing capacity of subgrade under a plastic sheet occurs as a result of increased water content from condensation or effects of frost. R. Meffert. HRIS 62. IRRD 700454. COMPLETE

(8) Durability of Technical Structural and Maintenance Measures Taken on Roads which are not Resistant to Frost. HRIS 40. IRRD 701664. COMPLETE

5. BUNDESANSTALT FUR STRASSENWESEN, AUSSENSTELLEINZEL: Bauhofstrasse 2, D-8221, Inzell

(21) Influence of Temperature on Coefficients of Sliding Obtained with the Stuttgart Friction Meter. Determination of the influence of temperature on coefficients of sliding by short term measurements under varying temperature conditions. H. Schmitz. HRIS 24. IRRD 700450. ACTIVE

6. MINISTRY FOR ECONOMICS AND TRANSPORT, DEPARTMENT XIII (Ministerium fur Wirtschaft, Mittelstand und Verkehr. Abt XIII): Dorotheenstrasse 6, 7000 Stuttgart

(2) Development of a Computerized Data-Processing System for Road Works. To cover all phases of road construction and administration. A. Bohringer. HRIS 21. IRRD 700455. COMPLETE

7. REGIONAL HIGHWAY DEPARTMENT WESTFALEN-LIPPE (Landschaftsverband WestfalenLippe): Freiherr-von-Steinplatz 1, Postfach 6125, D-4400, Muenster

(2) Group Analysis to Determine the Repeatability and Comparability of Freezing-Thawing-Cycle Tests. HRIS 32. IRRD 701676. ACTIVE

(3) Basic Studies of Damage to Coupled Joints in Prestressed Concrete Bridges. To measure the weak points in the coupled anchors of the Kottenohl Valley Bridge under defined traffic loads. Voss, K. Kordina. HRIS 25. IRRD 701809. ACTIVE

(4) The Accuracy of and Possible Errors in Electromagnetic Thickness Measurement. To test the accuracy of a meter designed to measure pavement layer thickness. W. Muegge. HRIS 34. IRRD 702012. COMPLETE

8. STATE LABORATORY FOR BUILDING MATERIAL TESTING (Landesamt fur Baustoffprufung): Paul-Fellnerstrasse 1, 2800 Bremen 1

(3) Group Analyses to Test the Use of a Method of Determining the Presence of Trinidad Asphalt in Bituminous Mixture. HRIS 31. IRRD 701512. COMPLETE

9. STATE ROAD OFFICE OF HESSE (Hessisches Landesamt fuer Stassenbau): Wilhelmstrasse 10 D-6200 Wiesbaden.

(2) Comparative Studies of the PTFE/POM-HGW and PFTE/EST Sliding Couples in the Point Tipping Skiding Bearings of the Bahn Bridge at Eselwiese. A study of these bearings after six years of traffic loading to determine wear by laboratory testing, after removal from the bridge. Hakenjos. HRIS 25. IRRD 701810. ACTIVE

10. SENATOR FOR BUILDING AND HOUSING - BERLIN (Senator fur Bau-und Wohnungswesen, Berlin) Street Planning and Construction Division: Wurttembergische Strasse 6-10, D-1000 Berlin 31.

(8) The Effects of Repairs Carried out on the Stadtring Berlin Motorway on Traffic Flow and Accidents. To quantify the expected changes in traffic flow and safety while these repairs are going on. HRIS 51. IRRD 701777. ACTIVE

(10) Base Courses Below Gussasphalt Surface Courses. A study of the behavior and properties of existing base courses in gussasphalt surfacings to determine best mix designs. HRIS 62. IRRD 701738. ACTIVE

15. CITY OF STUTTGART, BOROUGH ENGINEER'S OFFICE (Tiefbauamt Stuttgart): Hohe Strasse 25, 7 Stuttgart.

(5) The Effect of Particle Size, Type of Sand and Type of Filler on Skidding Resistance at High Speed - Part 2. HRIS 24. IRRD 701915. ACTIVE

16. TECHNICAL UNIVERSITY OF AACHEN (Technische Hochschule Aachen): Templergraben 55, D-5100 Aachen

a. Building Research Institute: Schinkelstrasse, D-5100, Aachen

(7) Principles of the Deformation Behavior of Unreinforced Elastomeric Bearings with High Bearing Capacity. Derivation of a general theory of the deformation behavior of elastomeric materials placed loosely between structural elements subjected to compressive loading. K. Wesche. HRIS 34. IRRD 700703. ACTIVE

(10) Creep Deformations of Old Unreinforced Concrete. To determine the creep deformation of unreinforced concrete in relation to type of cement, admixture and age at loading. K. Wesche, I. Schrage, W. Vomberg. HRIS 32. IRRD 700713. COMPLETE

(12) Stress-Deformation Lines for Lightweight Concrete. A continuation study of IRF 16a (11) on the influence of aggregate content, particle modulus of elasticity, shape and surface, using natural sand. K. Wesche. HRIS 25. IRRD 700904. COMPLETE

(13) Long-Term Behavior of Epoxy Resins in Concrete Construction. Studies of strength, weather resistance, deformation, shear strength of glued connections subjected to fatigue loading under various environmental conditions. K. Wesche. HRIS 34. IRRD 700919 COMPLETE

(14) Condition and Definition of the Concrete Surface for Coating Concrete Carriageways and Structural Elements Not Used by Vehicles. R.R. Schulz. HRIS 32. IRRD 701530. COMPLETE

GERMANY (contd)

16. a. (15) Development of a Method of Determining the Compressive Strength of Normal and Lightweight Concrete in Relation to the Matrix and Aggregate Properties. K. Wesche. HRIS 32. IRRD 700942. COMPLETE

(16) Pumping Properties of Lightweight Concrete. To establish the principles of water absorption of lightweight aggregate and develop a method permitting the necessary saturation of lightweight aggregates or the addition of water in relation to distance transported and the desired composition after pumping. K. Wesche, V. Hermann. HRIS 32. IRRD 701375. ACTIVE

(17) Tests to Determine Permissible Horizontal Forces on Supports not Anchored. Determine coefficients of friction between supports and neighboring structural parts under static and dynamic vertical loading. H. R. Sasse. HRIS 25. IRRD 701260. (Citations) COMPLETE

(18) Long Term Behavior of Elastomers. To determine the long-term deformation behavior of elastomeric supports by means of systematic tests considering disturbances resulting from thermodynamic relation between selection of various materials to be considered. HRIS 34. IRRD 701261. ACTIVE

(19) Development of a Model of the Mechanical Interactions between Elastomeric Bearings and Associated Structural Concrete Elements. To develop a model that will describe this interaction. H. R. Sasse. HRIS 25. IRRD 700268. ACTIVE

(20) Effect of Various Processing Methods on Concrete Surface Condition. A study to determine the effect of these methods on both road surface and nontraffic structural concretes, based on samples taken directly from the structures or pavement. HRIS 33. IRRD 701927. COMPLETE

New Project

(21) Penetration Depth of Chlorides and Carbonization of Concrete on Parts of Road Bridges Most Affected by Deicing Salts in Relation to the Density and Age of the Concrete. To determine chloride concentration, dispersion, porosity influence, and whether age of concrete is a factor in penetration. K. Wesche. HRIS 32. IRRD 702395. ACTIVE

b. Institute of Quarrying and Engineering: Mauerstrasse 5, Aachen

(2) Studies of the Hydration of Various Cements at Low and High Temperatures. To investigate the influence of temperatures from -10 to 90 degrees C on the hydration of cements with various admixtures. HRIS 32. IRRD 700707. ACTIVE

(4) Effect of Distribution of Chlorides Resulting from Transport Operations on Corrosion of Steel in Concrete. H.E. Schwiete. HRIS 32. IRRD 700941. ACTIVE

c. Institute for Construction Machinery and Operations: Mies-van-der-Rohe-strasse, D-5100 Aachen.

(7) Influence of Rigidity of Base on Successful Compaction. An attempt to determine the extent to which the density and deformation modulus of the base influences the success of the compaction of the fill layer, making use of different types of equipment, different soil types and varying depth of fill. HRIS 62. IRRD 700156. COMPLETE

(9) Evaluation of the Efficiency of Soil Compactors by Means of the Standard Equipment. HRIS 41. IRRD 700597. COMPLETE

16. c. (11) Procedure for Measuring Moisture during Production of Concrete According to the Nuclear Physics Method. A comparison of three methods of measuring adverse effects, conductivity, electrical and nuclear physics as regards density, temperature, particle size distribution, unnatural electrolyte content and material layering. H. Frenking. HRIS 32. IRRD 702019. ACTIVE

(12) Criteria for Evaluating the Uniformity of Mixtures. To test concrete mixers in accordance with quality specifications. H. Frenking. HRIS 32. IRRD 702020. ACTIVE

d. Institute for Roadway, Earth and Tunnel Construction: Mies-vander-Rohe Strasse, D-5100, Aachen

(11) Observations and Conclusions on Damage to Road Pavements Subjected to Prolonged Effects of Traffic. To study an experimental section of Federal highway over ten years. W. Leins. HRIS 24. IRRD 700462. ACTIVE

(12) The Effect of Wind on the Safety of Road Traffic. The influence of wind on various types of vehicles, and in relation to characteristics of the terrain. W. Leins. HRIS 21. IRRD 700463. ACTIVE

(33) Effects of Methods of Placement, Placement Widths and Type of Equipment on Compaction Given Non-Uniform Laying Thickness Within the Same Cross Section. HRIS 33. IRRD 701506. ACTIVE

(34) Continuation of the Study on an Experimental Full Depth Asphalt Pavement in an Urban Area. HRIS 31. IRRD 701681. COMPLETE

(35) Development of a Method for Determining Numbers of Vehicles on the Federal Motorway A3. HRIS 55. IRRD 701640. COMPLETE

(37) Comparative Studies of Aggregates to Determine Relations between Strength Characteristics under Dynamic Stress and during Impact Testing. (In accordance with DIN 52109). HRIS 35. IRRD 701673. COMPLETE

(38) Determination of Dynamic Destruction Values of Aggregates after Structural Modification of the Testing Vessel for the Purpose of Influencing Boundary Zone Destruction. To subject particle mixtures to dynamic stress while structurally modifying particle and stamp. HRIS 35. IRRD 701913. COMPLETE

New Projects

(42) An Integrated System of Influencing the Motorway Switching Area at the Dernbach Triangle and the Koblenz Motorway Cross; Checking and Assessment of the Total System. The analysis and processing of the results of measurements obtained in the extended on-line traffic survey. W. Leins. HRIS 21. IRRD 702135. ACTIVE

(43) Comparison of Equipment for Determining the Luminance of Aggregates. To develop a method of testing the luminance of aggregates using equipment currently available. W. Leins. HRIS 35. IRRD 702138. ACTIVE

(44) Determination of the Relations Between the Strength Coefficients of Aggregates and Breaking Which Occurs During the Incorporation of Bituminous Mixtures. When bituminous mixture is compacted the material as a whole undergoes a deformation, mainly in the form of a reduction in volume resulting in a degree of breaking. W. Leins. HRIS 24. IRRD 702139. ACTIVE

New Project

16. d. (45) Drainage Properties of Various Types of Road Surfaces. The skidding resistance of wet road surfaces by the drainage in the contact area between the tire and the road, on the road roughness, on the tire tread, and on the effects of traffic and of the weather. W. Leins. HRIS 22. IRRD 702140. ACTIVE

e. Institute for Town Planning, Traffic and Water Conservation: Mies-van-der-Rohe-Strasse, 51 Aachen.

(9) Required Length of Acceleration Lanes. Studies to determine the required length of acceleration lanes in accordance with the layout of the ramps of roadway access roads in congested areas, by means of a simulation model, and on the basis of measured data on traffic behavior. HRIS 21. IRRD 700135. ACTIVE

(10) Entry Aids on Motorway Ramps. Development and testing of basic models for the development and installation of entry aids. HRIS 54. IRRD 700151. ACTIVE

(12) Determination of the Traffic Capacity of German Main Roads from Constructional and Traffic Data. Stage II: Traffic Surveys at 40-60 Sites. P. A. Macke. HRIS 55. IRRD 700467. ACTIVE

(19) Bus Networks for the Development of Conurbations and Their Boundary Areas As Supplementary Infrastructure Measures. Examine possibility of increasing efficiency or capacity of urban transport by expansion of public transport. C. Simons, H. Wall, H. Schweers, M. Krieg. HRIS 13. IRRD 701406. COMPLETE

(20) The Problems of the Mass Effect on the Resistance Functions Within the Framework of Traffic Distribution. To carry out integrated research to determine the "mass" in the urban traffic structure, the resistance as "effective distance," and distribution, taking into account these factors and the competitive situation. HRIS 13. IRRD 701415. COMPLETE

(21) Determination of the Characteristic Values of Traffic Flow on Experimental Sections of Road, with the Exception of Special Test Sections. Speed measurements on these sections during midday and evening during autumn, spring and early summer, with results stored on magnetic tapes. B. Benjamin. HRIS 55. IRRD 701293. ACTIVE

(22) Structures of Settlements as a Condition for Communication. HRIS 11. IRRD 701632. ACTIVE

(23) Width and Positioning of Stabilized and Unstabilized Edge Strips. HRIS 62. IRRD 701632. ACTIVE

(24) Evaluation of Published Material Dealing with Traffic Flow at Signal-Controlled Junctions (with Particular Reference to Improving the Space-Time Relations in an Urban Area). HRIS 54. IRRD 701641. ACTIVE

(25) Competition for the Use of Traffic Space. To develop a typology of use of and competition for traffic space by various traffic streams. R. Baier. HRIS 55. IRRD 700236. COMPLETE

(26) Maximum Speed for Buses on Motorways. Measurement of Traffic Flow. Determination of desired speeds of free-flowing vehicle distribution and behavior of various vehicle types under the effect of structural, operational, traffic and exogenous conditions. W. Angenendt, B. Beckmann. HRIS 55. IRRD 701869. ACTIVE

16. e. (27) Study of Freight Transport Distribution to Improve and Quantify Existing Models. To develop and calibrate models for operational traffic distribution for freight transport. P.A. Maecke. HRIS 13. IRRD 702875. ACTIVE

(28) Determination of Journey Times of Motor Vehicle Traffic on Roads in Urban Areas for Comparative Economic Calculations and for the Design of Streets, Taking into Account the Effects on the Quality of Residential Surroundings, Part A. Design of Streets, Stage 1. To develop a design method for streets. P. A. Maecke. HRIS 55. IRRD 702034. COMPLETE

(31) Design Criteria for Road Cross Sections Taking Account of Standard Properties and the Blending in of Road with the Environment. To develop criteria for taking environmental quality into consideration in road design. P.A. Maecke. HRIS 23. IRRD 702060. ACTIVE

New Project

(32) Decision and Optimization Models for the Practice of Traffic Planning Part B Decision Procedures. To work out a simple way of handling decision technology. P. Maecke. HRIS 12. IRRD 702134. ACTIVE

g. Chair of Landscape Ecology and Improvement: Mies-van-der-Rohe Strasse 1, D-5100 Aachen.

(2) Relations Between Maintenance of Nature, Road Planning, Road Construction and Traffic. Burkard, W. Pflug, Schramm. HRIS 23. IRRD 701426. COMPLETE

(4) Relations between Ecology, Layout of Roads, and Road Traffic. Part 3. To establish the effects of road construction and traffic on ecology and the effects of ecology on construction and traffic. W. Pflug, A. Schramm. R. Jahn. HRIS 23. IRRD 701984. ACTIVE

i. Institute for Massive Construction: Mies-van-der-Rohe Strasse, D-5100, Aachen.

(3) Extraction Tests to Determine the Bond Strength of Post-Tensioned Prestressed Beams. H. Trost. HRIS 25. IRRD 701234. COMPLETE

(4) Time-Dependant Deformations under Working Stresses in Partly Prestressed Concrete. To work out a formula for determining the displacements and a method of calculating deformations in partially prestressed concrete, particularly where there will be supplemental cast-in-place concrete added to structure. H. Trost. HRIS 32. IRRD 700269. ACTIVE

New Projects

(6) Formation of Longitudinal Cracks in Prestressed Members. To determine whether currently valid minimum requirements are sufficient to avoid longitudinal crack formation and guarantees sufficient strength up to failure. H. Trost. HRIS 25. IRRD 702387. ACTIVE

(7) Full Scale Model Tests with Bundles of Prestressed Members to Determine Clamping Coefficients which Determine Friction. To clarify the magnitude and type of clamping stresses for various types of prestressing members. H. Trost. HRIS 25. IRRD 702384. ACTIVE

j. Institute for Physical Chemistry: Templegraben 59, Aachen

(1) Relaxation of Plastic Materials. Further experimentation on the relaxation of plastic materials within the temperature range of 4k to 300 K.R. Kosfeld. HRIS 34. IRRD 700715. ACTIVE

16. l. Institute for Psychology: Kraemerstarasse 20-34, D-5100, Aachen

(2) Development of Procedures and Validation of Indicators for Measuring Stress in Drivers. To produce a model of stress which includes physiological variables. M. Kastner. HRIS 52. IRRD 700237. COMPLETE

(3) Validation of Stress Indicators in Drivers in a Controlled Environment. To develop criteria for measuring stresses in situ. M. Kastner, G. Guillot, C. Heinrich. HRIS 52. IRRD 701838. ACTIVE

m. Shock Tube Laboratory: Templgraben, D-5100, Aachen.

n. Institute for Light Construction: Wuellnerstr. 7, D-5100, Aachen.

(1) Determination of Static and Dynamic Wind Forces on Circular Cylindrical Structures. J. Kowalewski. HRIS 25. IRRD 700943. (Citations) COMPLETE

p. Institute for Communications Equipment and Data Processing: Templergraben 55, D-5100, Aachen.

(1) Development of an Automatic System for Influencing Traffic on Fast Roads. W. Kumm. HRIS 54. IRRD 701433. COMPLETE

q. Institute for Motor Vehicles: Templergraben 86-90, D-5100, Aachen.

(2) Effect of Different Longitudinal Road Gradients on Vehicles and Traffic. HRIS 53. IRRD 701629. COMPLETE

17. TECHNICAL UNIVERSITY OF BERLIN (Technische Universitat Berlin): Strasse des 17 Juni 135, D-1000 Berlin 12.

a. Institute of Structures and Strength of Materials: Strasse des 17 Juni, 135, D-1000, Berlin.

New Project

(10) Joint Programme on Plate Buckling Tests 2. Research Area 5: Local Introduction of Load, Part 5.1: Load Introduction Via Struts. Tests are to be undertaken on welded models with a pair of struts on a scale of 1:1, which correspond to a fairly large IPE section, and on large bridge models on a scale of 1:4. J. Lindner. HRIS 25. IRRD 702379. ACTIVE

c. Institute for Traffic Planning and Road Construction: Same address.

(15) Influence of Speed Signals on Traffic Flow. To determine under what conditions, on road sections, with linked traffic lights, the majority of drivers are willing to accept a guide speed displayed as recommended. Hoffman. HRIS 55. IRRD 700059. ACTIVE

(19) Increasing Initial Skidding Resistance of Fine Asphaltic Concrete. Tests at crucial points of experimental sections to see if improved skidding resistance can be obtained by spreading and rolling in of skidproofing materials, consideration being given to improved mix composition and laying procedure. HRIS 24. IRRD 700173. COMPLETE

(21) Making the Left-Turning Driver Safe at Traffic Signals. HRIS 54. IRRD 700581. ACTIVE

(23) Determination of a Background for Evaluating the Results of Skidding Resistance Measurements. K. H. Schulze. HRIS 24. IRRD 701477. ACTIVE

17. c. (24) Extending the Possibilities of Evaluating Aggregates with Respect to Polishing. K. H. Schulze. HRIS 35. IRRD 701478. ACTIVE

(25) Analyzing Accident Data Including Traffic Density Data and Road Data for Experimental Road Sections. To determine if traffic density or road data exerts the more favorable influence on accident incidence under certain margin conditions. K. R. Schwencke, D. Zmeck. HRIS 51. IRRD 701327. COMPLETE

(26) Effect of the Texture of Concrete Surfacings on Skidding Resistance. HRIS 24. IRRD 701698. ACTIVE

(27) The Effect of Features of the Road on the Speed at a Given Moment of a Free Travelling Car. To establish a functional relationship between the momentary speed of a single vehicle and the relevant features of the road section, including a measure of driving comfort. HRIS 53. IRRD 701743. COMPLETE

(28) Analysis of Commuter Selection of Transport Mode. To see whether group related behavior in choice of transport mode can be defined, based on data from commuter traffic, including such items as time of day, place of start and finish, trip duration, purpose of trip, and mode used for outward and return journeys where choice was available. HRIS 55. IRRD 701744. ACTIVE

(29) Construction of a Simulation Model to Evaluate Integrated Traffic Control in Associated Town Center Networks - Stage 2. To construct a stochastic model for a meshed road network of a desired configuration in which integrated traffic control elements are included. HRIS 54. IRRD 701762. ACTIVE

(31) Grooves in Road Surfacings to Improve Tire-Road Adhesion in the Wet. A study of the effectiveness, drawbacks and comparisons of this grooving. HRIS 24. IRRD 701787. ACTIVE

(32) Long Term Observation of the Skidding Resistance of an Experimental Road - Part 1, Measurements 1978-1980. A study of experimental roads laid between 1973 and 1975 covering different compositions, as to durability, deformation resistance and development of skidding resistance. HRIS 24. IRRD 701922. ACTIVE

(33) Effectiveness of Traffic Signals for Making Level Crossings Safe. To determine effect of various light combinations on the behavior of drivers approaching grade crossings, involving the use of flashing or steady red, and yellow lights where there are no barrier gates. P. Wimber, H. Erke. HRIS 54. IRRD 701879. (Citations) COMPLETE

(34) Traffic Engineering Problems Involved in the Switching Process in Traffic Lane Signalization. To create a transition signal between the green and the red lane signals so as to avoid any driving through a red signal when the lane direction is changed. G. Hoffmann. HRIS 54. IRRD 701986. ACTIVE

(35) Weather-Induced Changes in Road Safety and Traffic Flow on Motorways and Main Roads in Town Centers. To clarify the extent to which the drivers sensation of safety corresponds to the actual degree of safety during wet weather and darkness. G. Hoffmann. HRIS 52. IRRD 701987. COMPLETE

(36) Effects of Interaction of Tire and Road Surface on Adhesion in the Wet and at High Speeds using the Newest Types of Tires, Part 2. A more detailed examination of the effect of the road surface to illustrate the worst conditions for adhesion. J. Dames. HRIS 24. IRRD 701993. ACTIVE

New Projects

17. c. (37) Effects of Speed Signals on Traffic Flow Continuation. The research is a continuation of that reported in IRRD research project 700/059. G. Hoffmann. HRIS 54. IRRD 702106. ACTIVE

(38) Changes Caused by the Weather in Safety and Traffic Flow on Downtown Motorways and Main Roads, Part 2. The study seeks to clarify the extent to which the driver's feeling of safety corresponds to the actual decree of safety present on wet roads. G. Hoffmann. HRIS 51. IRRD 702107. ACTIVE

i. Institute for Construction Operations and Machinery: Same address.

New Projects

(2) Laying Procedures for Concretes Containing Plasticizers (Basic Studies). The possible methods and equipment are to be examined to determine the best method of laying and the equipment needed. H. Gutsche. HRIS 33. IRRD 702141. ACTIVE

(3) Use of Equipment and Compaction in the Laying of Bituminous Mixtures Difficult to Compact. To contribute to the development of procedures for the compaction of difficult bituminous mixtures. H. Gutsche. HRIS 24. IRRD 702142. ACTIVE

j. Institute for Automotive Engineering: Same address.

(2) Investigations at the Accident Site. Use of an interdisplinary team to examine accident causes and consequences to develop ways of preventing accidents and reducing consequences. W. Wanderer, G. Stuertz, Behrens. HRIS 51. IRRD 700884. ACTIVE

(3) Local Study of Accidents Involving Pedestrians and Riders of Twowheeled Vehicles. To collect technical, medical and psychological data on accidents, starting at the accident site, to provide information on causes, and consequences of road accidents, in particular the human errors and injuries that occurred. U. Wanderer. HRIS 51. IRRD 701297. ACTIVE

(4) Mathematical Simulation of Accidents Involving Motor Vehicles and Pedestrians. To study the possibility of reasonable alterations to motor vehicles for the protection of pedestrians. H. Gloeckner. HRIS 51. IRRD 701325. COMPLETE

(5) The Hannover-Berlin Retro-assessment Program. Study of the reconstruction of accidents for the purpose of determining positions and speed of collision, within shorter time. H. Rau. HRIS 51. IRRD 701328. COMPLETE

(7) Catalogue of Requirements Relating to the Outer Edges of Lorries. Statistical research and accident studies to provide a basis for determining possible measures to control outside edges of trucks as related to collisions with cars, pedestrians and two-wheeled vehicles. A. Heger, V. Middelhauve. HRIS 53. IRRD 701295. COMPLETE

(8) Measurement of Fatigue in Vehicle Drivers. To determine the effect of driver fatigue on safety. K. Garavy, M. Lemke. HRIS 52. IRRD 701296. COMPLETE

(9) Evaluation of Safety Belt Accidents. An evaluation of accidents involving seat belts, including injury patterns and types, parts of the belt causing injury, movement, mechanics of injury, malfunctions, etc., V. Vu Han. HRIS 51. IRRD 700238. (Citations) COMPLETE

17. j. (10) Evaluation of Counts at Accident Sites. To transfer accident information to magnetic tape, so as to prepare accident evaluation program. Kuehnel. HRIS 51. IRRD 701884. COMPLETE

(11) Reconstruction of Pedestrian Accidents within the Framework of Research on Biomechanics. To determine tolerance limits of the human body when subjected to the mechanical effects of a pedestrian accident. A. Heger. J. Hofmann. HRIS 51. IRRD 701885. ACTIVE

(13) Cost Benefit Analysis of the Lateral Protection of Pedestrians and Frontal Protection of Cars and Lorries. Costs and benefits of safety measures taken for two types of collisions: Car-lorry frontal and pedestrian/cyclist-lorry sideways. HRIS 51. IRRD 701881. COMPLETE

(15) Application of Cost Benefit Analysis to Safety Measures in Road Traffic. Stage Study of all relevent traffic safety measures, determine specific data, and provide collection framework. V. Vu-Han, J. Wuestemann. HRIS 51. IRRD 701883. ACTIVE

k. Department of Lighting Engineering: Einsteinufer 19, D-1000, Berlin.

(1) Development of a Method for Calculating Tunnel Lighting taking Account of Natural Lighting by Clear or Clouded Sky. To produce practical planning documents for calculation of complete tunnel lighting installations based on knowledge of local geographical and physiological factors. A. Stockmar. HRIS 21. IRRD 701263. ACTIVE

l. Section for Planning of Transport Systems: Strasse des 17 Juni 135, D-1000 Berlin 12.

(1) Determination of Variables and Parameters for Possible Total Models for Traffic Analysis and Forecasting on the Basis of Official Statistics. HRIS 13. IRRD 701614. COMPLETE

n. Department of Transport Economy and Politics: Same address.

New Project

(1) Census and Evaluation of Data on the Traffic Behavior of the Rural Population. To eliminate errors in the original data on the transport provided for and the traffic behavior of very small rural communities. G. W. Heinze, D. Herbst, U. Schuehle. HRIS 13. IRRD 702098. ACTIVE

18. UNIVERSITY OF BONN: Nussallee 1, D-5300 Bonn.

a. Institute for Town Planning, Regional Development and Culture: Same address.

(5) Principles for the Design of Traffic Development Facilities in the Restructuring of Old Areas. HRIS 54. IRRD 701627. ACTIVE

(6) Development of Weekend and Holiday Areas. HRIS 11. IRRD 701628. COMPLETE

g. Institute for Law of Water Economics: Same address.

New Project

(1) Environmental Compatibility of Measures Related to the Construction and Modification of Roads, and Road Facilities with Particular Reference to Densely Populated Areas. To study German laws as to requirements for testing for the compatibility of roads and road structures with the environment, and work out how deficiencies found could be rectified. J. Salzwedel. HRIS 17. IRRD 702095. ACTIVE

19. TECHNICAL UNIVERSITY OF BRAUNSCHWEIG (Technische Hockschule Braunschweig): Pockelstrasse 4, D-3300, Braunschweig.

a. Institute for Construction Materials and Reinforced Concrete: Beethovenstrasse 52, D-3300 Braunschweig

(16) The Resistance of Prestressing Steel to Stress Corrosion at High pH Values: Part 3. Systematic testing of the resistance to corrosion of prestressing steels at high pH values. HRIS 25. IRRD 700762. ACTIVE

(17) Test on Reinforced Concrete and Prestressed Concrete Beams Subjected to Combined Stress from Bending Moment, Transverse Force and Torsion. To undertake further work on the behavior of reinforced concrete elements under torsion, combined with bending and transverse forces. HRIS 25. IRRD 700763. COMPLETE

(21) Systematic Evaluation of Shear Tests on Shear-Reinforced Concrete Beams. Determination of a generally valid shear theory. K. Kordina. HRIS 25. IRRD 700770. COMPLETE

(24) Studies of the Influence of Fine Sand Constituents on the Compaction of Concrete (Rubberized Concrete). HRIS 32. IRRD 700618. COMPLETE

(25) Support Behavior of Overlapping Reinforced Mats. To determine the support behavior of overlapping sections of welded reinforced steel mats made of structural ribbed steel, when under expansion. G. Rehm. HRIS 25. IRRD 700846. ACTIVE

(26) Support Behavior of T-Beam Structures. Investigation of a design theory that beams cast within a slab can be determined as though they were T-beams, if attention is given to load distribution and placement of reinforcing. J. Eibl. HRIS 25. IRRD 700848. ACTIVE

(27) Bending of Welded Reinforcing Elements Around Point of Welding. To determine the criteria for selection of welding steels, if deflection is to take place at welding points without danger of cracking. G. Rehm. HRIS 34. IRRD 700851. (Citations) COMPLETE

(28) Level and Distribution of Transverse Tensile Stresses Around Bar Anchors in Concrete. To determine the way in which transverse tensile stresses in region of anchorage of ribbed steels are superimposed on each other and the magnitude of stress absorbed by the concrete. G. Rehm. HRIS 25. IRRD 700905. (Citations) COMPLETE

(29) Safety Aspects of Construction of Heavy Girder Scaffolding. A study of foreign practice in the field of heavy construction scaffolding. J. Eibl. HRIS 25. IRRD 700911. (Citations) COMPLETE

(31) Bonding Properties of Reinforcing Steel in Synthetic Resin Mortars. Short-term extraction tests of ribbed steels imbedded in synthetic mortar to determine required bonding length, particularly at high temperatures and long-term handling. G. Rehm, L. Franke. HRIS 25. IRRD 700922. ACTIVE

(32) Bonding Behavior of Ribbed Reinforcing Steels. To determine the bonding laws of commercial ribbed steels for normal bar diameters and concrete qualities for various states of dynamic and static loading. G. Rehm. HRIS 25. IRRD 700923. (Citations) COMPLETE

(34) Loop Joints at the Corners of Frames. K. Kordina. HRIS 25. IRRD 700968. COMPLETE

19. a. (36) Evaluation of the Results of Research Carried Out Abroad: Fire Resistance, Stability, Reinforced Concrete Frames and Supports, Torsion, Bending and Transverse Force. K. Kordina. HRIS 25. IRRD 701214. COMPLETE

(38) Support Behavior of Reinforced Concrete Beams Under Bending Stress. K. Kordina. HRIS 25. IRRD 701236. ACTIVE

(39) Rationalization of Reinforcement Technology. G. Rehm. HRIS 25. IRRD 701251. ACTIVE

(41) Study of the Influence of Vibrations on the Strength of Gravel Concrete and on the Bond between Reinforcing Steel and Concrete. Study of the effects of vibration intensity, frequency and duration on the strength of concrete during the first 24 hours after pouring. K. Kordina. HRIS 32. IRRD 701264. COMPLETE

(42) Subsequent Reinforcement of Presstressed Bridges in the Region of the Joint by Means of Adhered Butt Straps. To examine the use of steel lamellae stuck on to beam and girder cross sections with epoxy resins. HRIS 25 IRRD 700270 ACTIVE

(43) Fatigue Tests on Joints under Practical Conditions (Condition 2). Comparisons of the fatigue behavior of free and concreted couplings in structures. K. Kordina. HRIS 25. IRRD 700271. ACTIVE

(44) Working Out of Design Principles for Prestressed Concrete Structures under Combined Torsional Loading. To draw up new design principles based on an evaluation of studies previously carried out and on foreign prestressed concrete specifications. K. Kordina. HRIS 25. IRRD 700272. ACTIVE

(45) Working out of Design Principles for Reinforced Concrete Structures under Combined Torsional Loading. To derive general valid principles to facilitate design of such structures, based on evaluation of earlier studies. K. Kordina. HRIS 25. IRRD 700273. ACTIVE

(46) Evaluation of Existing and Future Reports on the Demolition of Prestressed Concrete Structures with Reference to the Long-Term Behavior of Prestressing Steels. A systematic evaluation of studies made on prestressing steels which have been made during demolition of such structures. K. Kordina. HRIS 25. IRRD 700274. ACTIVE

(47) Material Studies on Prestressed Concrete Structures to be Demolished to Determine Long-term Steel Behavior. To determine this behavior based on samples taken from demolished bridges. F.S. Rostasy. HRIS 25. IRRD 700275. ACTIVE

(48) Repair of Damaged or Imperfect Concrete Surfaces by Means of Impregnations, Coating or Renderings Based on Synthetic Resins. Long-term testing of various synthetic-resin based methods for surface repairs as to their durability. K. Kordina. HRIS 40. IRRD 700276. ACTIVE

(49) The Effect of Fine Sand Constitutents on the Compactability of Concrete (Rubberized Concrete). Examination of compactability and other properties of concrete made with these sands, with and without air entraining agents. HRIS 32. IRRD 701928. ACTIVE

(50) The Properties of Plastic Concrete for Road Construction. To study the optimum composition of normal-hardening and early high-strength plastic concrete. HRIS 32. IRRD 701929. COMPLETE

19. a. (51) Effectiveness of Conservation Measures on Bridge Structures Endangered by Alkali Reaction. To test hydrophobic coatings on older bridges to prevent or diminish deteriorating effects of alkali. K. Kordina. HRIS 40. IRRD 701812. ACTIVE

(52) Effect of Vibrations of Fresh Concrete on the Bearing Capacity of Overlapping Struts. To determine which relative movements between concrete and reinforcement can be absorbed without damage to the bonding properties. K. Kordina. HRIS 32. IRRD 701861. (Citations) COMPLETE

(53) Prestressed Concrete Elements in Segmental Construction under Combined Torsional, Bending and Transverse Stress. To establish principles for the design and construction of prestressed concrete elements in segmental construction under combined torsional stress. K. Kordina. HRIS 25. IRRD 701862. ACTIVE

New Project

(54) Studies of a Prestressed Concrete Bridge with Respect to its Conservation or the Repair of Alkali Reaction Damage. To study the course and eventual abating of alkali reaction on a badly damaged prestressed concrete bridge which is ready for demolition. K. Kordina. HRIS 25. IRRD 702378. ACTIVE

b. Chair for Roads, Earthworks and Foundations: Same address.

(7) Compactability of Bituminous Mixtures - Definition, Determining Influence Factors. Quantifying the Influence. To study various asphalt mixtures with respect to their compactability in relation to individual mixture components. HRIS 31. IRRD 701917. COMPLETE

(8) Effect of Primary Features of Aggregates on the Behavior of Asphalts; Part A: Formation of the Fine Constitutents of Chippings as a Result of Dynamic Stress and Consequences for Rheological Behavior. To examine whether and how composition and properties an asphalt mix rich with chippings, is influenced by the primary properties of the aggregate. HRIS 35. IRRD 701921. ACTIVE

c. Institute for Vehicle Technology: Hans Sommer Strasse 4, 3300 Braunschweig

(11) Sideways Forces Resulting From Road Irregularities. HRIS 24. IRRD 701480. COMPLETE

(12) Measurement of Wheel Loads Caused by Vibrations of Rigid Axles. HRIS 24. IRRD 701481. COMPLETE

(13) Effect of the Torsional Stiffness of the Chassis on Road Stress. A study of the effect of this stiffness in a lorry chassis on the magnitude of wheel load fluctuations and stresses on roads. HRIS 53. IRRD 701784. COMPLETE

(14) Handling of Cars in the Wet. To quantify the behavior of individual driver/vehicle unit and extrapolate results of other research to predict effects of possible adaption of design speed to actual speeds. HRIS 52. IRRD 701791. COMPLETE

(15) Handling of Car-Caravan Trains during Braking on Bends. To obtain a dynamic model of the movements of car and caravan during combined steering and braking manoeuvers. M. Mitschke. HRIS 53. IRRD 701839. COMPLETE

19. c. (17) Experimental Study of the Dynamic Compatibility of Cars and Caravans. To check by testing, the theoretically determined relation between the damping mass of the pendulum vibration of the caravan and the modification of the characteristics of the car on curves. M. Mitschke, R. Heyken, E. Sagan. HRIS 53. IRRD 701887. ACTIVE

(18) Measurement of Sideways Forces of Lorry Tires during Dynamic Fluctuations of Wheel Load, Angular Deviation and Leaning. The use of a dynamic device for testing tires on both cars and lorries under these conditions. M. Mitschke. HRIS 53. IRRD 701994. ACTIVE

(19) Dynamic Width Requirement of Vehicle Trains. A study to determine the lane widths required to allow for the pendulum oscillations of road trains on wet roads. M. Mitschke. HRIS 53. IRRD 701995. COMPLETE

(20) Effect of Spring and Damper Bonding Action on Lorries on Road Stress. To determine the effects of transverse, logitudinal and diagonal bonding in lorry suspension and damping on road stress. M. Mitschke. HRIS 53. IRRD 701999. ACTIVE

New Projects

(22) Optimum Intensification Factors in Braking Equipment. To investigate the effect of the intensification factors of car braking power intensifiers from the point of service, comfort, serviceability and failure behavior. R. Heyken, H. Braun. HRIS 53. IRRD 702346. (Citations) COMPLETE

(23) Study of the Literature on the Subject of Axle Load Frequencies in Commercial Vehicle Traffic. To refine a previously developed procedure for calculating axle load distributions in commercial vehicle traffic. M. Mitschke. HRIS 55. IRRD 702143. ACTIVE

d. Institute for Municipal Engineering: Pockelstrasse 4, D-3300 Braunschweig.

(9) Motor Traffic Flow in Systems. Treatment of the road network as a control circuit in which the road junctions are in a certain relation to each other, using automatic counters on partial networks to determine transfer characteristics of junction elements, in order to determine new and more precise criteria for construction measures and traffic regulation. Habekost. HRIS 55. IRRD 700485. COMPLETE

(12) Dependence of Individual Traffic Behavior on the Structure of Transport Supply. Study of effects of transport supply on the causal chain of individual features, journey structure, activities practiced, local changes, determination of indicators for service standards, etc. W. Ruske. HRIS 16. IRRD 701973. ACTIVE

New Project

(13) Effect of Cycle Paths on Road Safety Outside Towns. Part 3 - Evaluation of Data Obtained in Lower Saxony. To determine the relations between risks to cyclists and the characteristics of roads and to evaluate the relations to develop conflict strategies. W. Ruske, A. Ahrens. HRIS 51. IRRD 702355. ACTIVE

f. Institute for Steel Construction; Beethovenstrasse 51, Postfach 33 29, D-3000 Braunschweig.

(3) Study of the Bearing Capacity of Steel Structures Having Level, Disc-Like Stressed Plates By Means of Realistic Large Scale Tests. Part 2. 1: Stiffened Plates Under Simple Conditions of Load and Support. R. Barbre. HRIS 25. IRRD 701201. ACTIVE

19. f. (6) Studies of the Non-linear Bearing Behavior of Steel Plate Beams with Wide, Disc-like Flanges Subjected to Single and Repeated Loads up to Failure. A study of the effect of non-linear material laws on the bearing capacity of wide plate beam flanges. R. Barbre, H. Schmidt, U. Peil. HRIS 25. IRRD 701376. ACTIVE

(7) Plate Beams - Cooperating Width, Influencing the Cooperating Width of the Carriageway of Plate Beam Bridges by Structural Features in the Main Girders (Variable Cross Sections). Study of the effect of variable main girder stiffness on the cooperation of wide flange discs for a wide range of parameters. R. Barbre, H. Schmidt, W. Born. HRIS 25. IRRD 701377. (Citations) COMPLETE

(8) Simple Screw Connections. To propose designs for simple bolt connections, particularly screwed connection, under static loading. J. Scheer. HRIS 25. IRRD 700277. ACTIVE

New Projects

(9) Measurements of Strain on the 2nd Weser Bridge at Hamlin to Determine Shrinkage and Creep. Part 2. To develop a long term program for studying the shrinkage and creep behavior of bonded structures based on measurements of shrinkage and creep taken during the construction and after completion of the bridge. R. Barbre. HRIS 25. IRRD 702377. ACTIVE

(10) Joint Programme on Plate Buckling Tests 2, Research Area 5: Local Introduction of Load. Part 5.2: Load Introduction Without Struts. To research the buckling behavior of web plates subjected to concentrated transverse loads and bending moment with transverse load in order to create principles for determining the limits of validity of checks for pure web plate partially hipped ends. J. Scheer. HRIS 25. IRRD 702381. ACTIVE

g. Institute for Statics: Pockelstrasse 4, Braunschweig.

(2) Study of Reinforced Concrete Slabs Having Non-linear Material Laws (Creep in Condition 2). To determine the cutting force redistribution in reinforced concrete slabs as a result of creep in the cracked condition by means of a finite element method. H. Duddeck. HRIS 25. IRRD 701381. ACTIVE

(3) Buckling of Stiffened Slabs and Cylindrical Shells. Develop and extend a design method for geometrical and non-linear material problems to the calculation of sheet metals and cylindrical shells subjected to compressive stress. H. Duddeck. HRIS 25. IRRD 701382. ACTIVE

(4) Studies of Reinforced Concrete Slabs with Non-linear Material Laws (Condition 2). To supplement previous work using the finite element method to determine redistribution of forces in a structure by experimental studies to check the theoretical work. H. Duddeck. HRIS 25. IRRD 701379. ACTIVE

(5) Model Tests on Structures Made of Reinforced and Prestressed Concrete, Taking into Account of Realistic Material Behavior. To develop a suitable testing technique and associated measuring procedure which allows test on small scale models of engineering structures to be carried out as reliably as normal full-scale tests. H. Twelmeier. HRIS 25. IRRD 701380. ACTIVE

19. h. Department of Reinforced Concrete and Structures: Pockelstrasse 4, D-3300 Braunschweig.

(1) Repairing Structures Damaged by Alkali Reaction. To develop means of restricting alkali damage, ensure means of maintenance of the structures, protect reinforcing from corrosion, and procedures for testing for such damage. K. Kordina. HRIS 40. IRRD 700850. ACTIVE

(2) Buckling Stability of Sections of Structural Lightweight Concrete. To develop design aids for slender reinforced and unreinforced lightweight structural concrete sections for use in approximately the same areas as normal concrete. K. Kordina. HRIS 25. IRRD 700915. ACTIVE

i. Department of Building and Prefabrication: Schleinitzstrasse, D-3300 Braunschweig.

(1) Struts for Precast Reinforced Concrete Construction. To determine the best shapes for struts in reinforced concrete precast supports, and derivation of design principles and aids for the treatment of these struts. H. Paschen. HRIS 25. IRRD 700847. (Citations) COMPLETE

(2) Bonding Behavior of Reinforcing Steels Under Short-Term Loading. Study of bonding properties of steel under special loading types, and the conditions under which bond is dissolved determined, with special consideration of bond behavior when horizontal loading is maintained for a long time. H. Paschen. HRIS 25. IRRD 700925. COMPLETE

(3) Boiler Foundations. H. Paschen. HRIS 25. IRRD 700939. COMPLETE

(4) Concrete Brackets Stressed by Shear and Torsion. Study of the torsional forces in reinforced precast concrete elements in which brackets are loaded on one side only of the member. HRIS 25. IRRD 701383. ACTIVE

(5) Tests to Determine the Best Shapes for Struts in Reinforced Concrete Prefabricated Supports and Working out of Design Equations and Aids for the Treatment of These Struts - Fatigue Tests and Load Eccentricity. A followup of earlier work on this subject. H. Paschen, V.C. Zillish. HRIS 25. IRRD 702327. ACTIVE

j. Department of Applied Psychology: Speilmannstrasses 19, Postfach 3329, D-3300 Braunschweig.

(5) Effectiveness of Traffic Signals at Level Crossings. To determine whether the red flashing light now used or a two-stage signal having color sequence of amber-to-red is more effective at level crossings. H. Erke, F. Meyer. HRIS 54. IRRD 701300. (Citations) COMPLETE

(7) Establishment of Principles Concerning Information Limitation in Road Signs. To establish ways of optimizing the transmission of information through road signs by means of limitation, organization and learning processes. H. Erke, W. Gottlieb. HRIS 54. IRRD 701330. COMPLETE

(9) Psychological Studies on the Effectiveness of Changeable Traffic Signs. HRIS 54. IRRD 701652. COMPLETE

(10) Effectiveness of Traffic Signals for Making Level Crossings Safe - Psychological Studies. Investigation of an alternative signal having the color sequence amber-red, and observing braking behavior of road users. H. Erke. HRIS 54. IRRD 700239. ACTIVE

19. j. (11) Establishment and Evaluation of Dangerous Conflict Situations in Traffic in Town Centers: Part 1: Validation Study at Junctions: Part 2: Vehicle-Pedestrian Conflict. Evaluation of junction traffic conflicts and classify conflicts and near misses with respect to likelihood of accident occurence. HRIS 51. IRRD 700240. (Citations) COMPLETE

(12) Testing and Evaluation of Procedures for the Central Documentation and Rewriting of Direction Signs on Motorways. To develop a simple and economic method of documenting and evaluating directional signing. HRIS 54. IRRD 701767. COMPLETE

New Project

(13) Handbook for Carrying Out Conflict Counts and Evaluations. To describe method and aim of traffic conflict technique for use in diagnosis of hazardous traffic situations and for accident forecasts. H. Erke, B. Zimolong, H. Gstalter. HRIS 51. IRRD 702338. ACTIVE

k. Welding and Materials Technology Institute: Langer Kamp 8, D-3000, Branschweig.

(1) Plasma Welding of High-Alloy Steel with Additional Materials. To further develop the technology of plasma welding with additional wire, as well as the comparison with flame arc welding. J. Ruge. HRIS 34. IRRD 701384. COMPLETE

l. Official Testing Laboratory for Building Materials: Pockelstrasse 14, D-3300, Braunschweig.

(1) Effect of Type, Shape and Particle Composition of Mo Particles on the Properties of Concrete. To examine these effects to derive characteristic values for the design of concrete mixtures. K. Kordina, F.S. Rostasy. HRIS 32 IRRD 702025. ACTIVE

20. TECHNICAL UNIVERSITY OF CLAUSTHAL (Technische Universitat Clausthal): 3392, Clausthal Harz.

a. Institute for Stone and Soil: Same address.

(2) Development of a Standard Impact Apparatus for the Production of Marshall Samples, and Testing of the Apparatus on Various Types of Bituminous Mixtures for Roads. HRIS 31. IRRD 700609. ACTIVE

(3) Planning, Executing and Evaluation of Group Analyses to Define the Repeatability of the Procedure for Carrying out Impact Tests on Chippings. HRIS 35. IRRD 701674. ACTIVE

21. TECHNICAL UNIVERSITY OF DARMSTADT (Technische Hochschule Darmstadt): Alexanderstrasse 5, D-6100 Darmstadt

(1) Study of Wind Loads. To develop a wind speed map from existing series of meteorological station data in relation to type of terrain dealing with economic and safe assumptions for wind loads. G. Koenig. HRIS 25. IRRD 700931. (Citations) COMPLETE

(2) Principles for a New Standard for Traffic and Wind Loads. Theoretical studies of safety which can be applied to designs so as to avert catastrophes due to wind loads. G. Koenig. HRIS 25. IRRD 700932. COMPLETE

GERMANY (contd)

21. a. Road Research Institute: Hochschulstrasse 1, D-6100 Darmstadt

(4) Measurement of Wear due to Spiked Tires on Federal Trunk Roads. To compare fine surface profiles in wheel track areas before and after the winter season. R. Klein. HRIS 24. IRRD 700487. COMPLETE

(13) Determination of the Final Compactability of Bituminous Mixes in the Laboratory. Gyratory compactor to approach compaction finally achieved under road traffic. R. Klein. HRIS 31. IRRD 700489. ACTIVE

(25) Influence of Waiting Times During Soil Stabilization with Cement. G. Paulmann. HRIS 62. IRRD 701494. ACTIVE

(26) Method of Testing the Frost Resistance of Soil Stabilized with Cement. G. Paulmann. HRIS 64. IRRD 701495. ACTIVE

(28) Group Analysis to Determine Repeatability and Comparability in Determining Proctor Density and Optimum Moisture Content. HRIS 61. IRRD 701661. ACTIVE

(29) Relation between Deformation Values Obtained in the Laboratory and the Behavior of Bituminous Materials in Use. HRIS 31. IRRD 701689. ACTIVE

(30) Testing Methods of Study for Determining Their Effects on the Deformation, Strength of Bituminous Mixtures. HRIS 31. IRRD 701690. ACTIVE

(31) Group Analysis to Determine the Repeatability and Comparability of Tests to Determine the Fault Plane in Aggregates. Tests by 11 laboratories to carry out the investigations, with evaluation by the University. G. Paulmann. HRIS 35. IRRD 702005. COMPLETE

New Projects

(32) Test Procedures for Restoring Binder from the Centrifuged Binder Solution After Extraction from Bituminous Mixture. To study several procedures for restoring binder from the solution. R. Klein, R. Henhappl. HRIS 31. IRRD 702108. COMPLETE

(33) Group Analysis to Determine the Repeatability and Comparability of Four Procedures for Testing Stone Dusts. Results of the group analysis will be statistically evaluated for the four procedures. G. Suss. HRIS 35. IRRD 702144. ACTIVE

b. Institute for Massive Construction: Same address.

(10) Recommendations for the Use of Reinforcing Bar Steel IV. For use in association with Standard DIN 1045. H. Weigler. HRIS 25. IRRD 700790. ACTIVE

(26) Standardication of Specifications for Non-prestressed and Prestressed Reinforced Concrete Structures: Shear Behavior of Prestressed Deflection Beams. G. Mehlhorn. HRIS 25. IRRD 700995. COMPLETE

(27) Concept of Safety for Checking the Bearing Capacity of High Piers Taking Acoount of Statistical Scatter on the Boundary Conditions such as Subsoil Properties, Support Values and Bearing Displacements. Statistical evaluation of data on subsoil properties, support values and displacement of bearings to characterize the mean value and standard deviation. H. G. Schaefer. HRIS 25. IRRD 701267. COMPLETE

21. b. (28) Subsequent Reinforcing of Reinforced Concrete and Prestressed Concrete Cross Sections. Study of the application of lamellae to concrete members using dowels set in boreholes as a means of repairing damaged couplings. G. Koenig, H. Weigler. HRIS 40. IRRD 700278. ACTIVE

(29) Checking Stability in the Area of the Centre Moments in Bridge Construction. To develop procedures for this checking which will guarantee a level of safety comparable with the area outside the centre of moments. G. Koenig. HRIS 25. IRRD 700279. ACTIVE

(30) Loss of Prestressing Force in Prestressed Couplings as a Result of Creep and Shrinkage. To examine the influence of greater creep and shrinkage in the coupling area due to the linked anchor having a larger cross section and a different shape. G. Koenig. HRIS 25. IRRD 700280. ACTIVE

(33) Tensile Strength of Concrete in Reinforced Concrete Construction. To determine where a local lack of tensile strength is to be expected. G. Koenig. HRIS 32. IRRD 701815. ACTIVE

c. Institute for Traffic Planning and Engineering: Petersenstrasse, D-6100 Darmstadt.

(12) Road Traffic Accidents in Residential Areas. To develop planning and design principles for traffic development of residential areas, with particular attention to increasing road safety. H. Staadt. HRIS 51. IRRD 700876. INACTIVE

(15) Criteria for the Quality of Traffic Flow in Signal Program Calculation. To optimize traffic flow at signal-controlled junctions, with the total waiting time of all vehicles to be minimized. H.G. Retzko. HRIS 54. IRRD 702051. ACTIVE

d. Department of Statics and Steel Structures: Alexanderstrasse 7, D-6100 Darmstadt.

(3) Spatial Grillage Made of Rectangular Hollow Sections. O. Jungbluth. HRIS 25. IRRD 700946. COMPLETE

(4) Computer Aided Design and Construction in Steel Engineering by Means of an Interactive Construction Point Taking Account of Industrial Partial Prestressing. O. Jungbluth, R. Bertzky. HRIS 25. IRRD 700996. ACTIVE

(5) Study of the Bearing Capacity of Steel Structures Having Level, Disc-like Stressed Plates by Means of Realistic Large Scale Tests. Part 1:1: Full Wall and Large Box Girder Without Struts. O. Jungbluth. HRIS 25. IRRD 701200 (Citations) COMPLETE

(6) Stability in Steel Engineering, Part 2. O. Jungbluth. HRIS 25. IRRD 701268. ACTIVE

New Projects

(10) Computer Aided Design and Construction Taking Account of the Flexible Systems Used in the Construction of Steel Bridges. Part 2. To apply the method of computer aided design processing to any type steel bridge cross sections made of flat metal sheets stiffened longitudinally and transversely and to pipe sandwich cross sections. O. Jungbluth. HRIS 25. IRRD 702376. ACTIVE

New Project

21. d. (11) Computer Aided Design and Construction Taking Account of the Flexible Systems Used in the Construction of Steel Bridges. Parts 2 and 3. Further development of programs for computer aided design processing proposing that the main links between material, design, construction, calculation and manufacture can only be handled sensibly by computer. R. Jungbluth, K. Keller. HRIS 25. IRRD 702393. COMPLETE

e. Department of Soil Mechanics and Foundation Engineering: Petersenstrasse 12, D-6100 Darmstadt.

(2) The Compaction of Rock Fills. To determine the amount of compaction required when rock from cuttings is used to construct embankments. HRIS 62. IRRD 701798. ACTIVE

f. Institute for Hydraulics and Hydrology: Petersenstrasse 13, D-6100, Darmstadt

(1) Model Tests on the Runoff of Rain Water on Staggered, Twisting Sections of Road. HRIS 22. IRRD 701658. COMPLETE

(2) Function and Economic Viability of Drainage Facilities on Roads to Absorb Surface Water. HRIS 22. IRRD 701668. ACTIVE

(3) Evaluation of Vehicle Handling in Relation to Characteristics of the Road and Weather Conditions - Measurement and Evaluation of Climatic Factors. To check on the depth of water film on pavements by means of an electrical resistance procedure. HRIS 53. IRRD 701780. ACTIVE

(4) Development and Testing of an Integral Method of Measuring the Roughness of Road Surfacings, Stage 1. To develop a portable testing apparatus for determining the runoff roughness of surfacings. HRIS 24. IRRD 701792. ACTIVE

g. Department for Long Distance Reconnaissance and Interpretation of Photos: Karolinenplatz 5, D-6100 Darmstadt.

(1) Aerial Photo Interpretation for Road Planning Relevant to the Environment. To investigate the use of aerial photography in highway planning with emphasis in obtaining information relevant to environmental effects. J. Albertz. HRIS 21. IRRD 701983. ACTIVE

h. Department of Water and Transport, Section Highway Design. Karolinenplatz 5, D 6100 Darmstadt.

New Project

(1) Checking of the Starting Values of the Ral-L Specific to Driving. Results of the research should facilitate a revision or improvement of the design principles. B. Hoerber. HRIS 21. IRRD 702133. ACTIVE

22. ERLANGER-NUERNBERG UNIVERSITY: Martenstrasse 7, D-8250, Erlangen

(3) Electrochemical Studies of the Passivity and the Stress Corrosion Sensitivity of Prestressing Steels in the pH Area 7-12.6. To determine why prestressing steels in normally dense concrete covers are not subject to cracking; whether the reduction of the pH value to the neutral level may bring about cracking: and if cracks caused by corrosion occur only under unfavorable conditions. H. Kaesche. HRIS 34. IRRD 700282. ACTIVE

23. UNIVERSITY OF HAMBURG (Universitat Hamburg): Von-Melle-Park 9, 2000 Hamburg 13.

c. Institute for Social Science: Sedanstrasse 19, D-2000 Hamburg.

(1) Recreational Behavior of and Accidents Involving Motorcyclists. To find out how private motorcycle clubs are organized and the effect they have on the behavior of individual cyclist. K. Ohle. HRIS 52. IRRD 700241. COMPLETE

(2) Group Sociological Studies on the Leisure-time Behavior and Accident Involvement of Riders of Motorcycles. To determine if there is a definite relationship between organization forms of motorcyclists and their behavior. K. Ohle, P. Schmidt. HRIS 52. IRRD 701841. ACTIVE

d. Seminar for Criminal Law Relating to Juveniles and Youth Services: Schlueterstrasse 28, D-2000, Hamburg.

(1) Alcohol and Driving - Legislation, Control and Sanction Documentation. To analyze trends and focal points of the social control of drinking and driving, on the levels of legislation, penalties, and police activites. H. J. Kerner, T. Feltes, S. Triebler, E. Philipp. HRIS 51. IRRD 701840. ACTIVE

24. TECHNICAL UNIVERSITY OF HANNOVER (Technische Hochschule Hannover): Welfengarten 1, D-3000 Hannover

a. Institute for Materials Testing and Research: Nienburgerstrasse 3, D-3000, Hannover.

(5) Comparative Study on a Test Section with a Standard Structure with a Bituminous Base Course and a Structure with a Mineral Aggregate Base Course. Comparative studies of bituminous and mineral aggregate base courses to determine the reliability of data generally used in theoretical studies. J. Weinhold. HRIS 24. IRRD 700498. ACTIVE

(8) Experimental Road Having a Heat-Insulating Course of Light Asphalt. Continuation of studies on two Kananohe-Kaltenweide experimental road sections, one having a subsoil insulating course and the other a frost blanket, the studies to: a) determine and compare temperature and seasonal conditions at various depths to establish the efficiency of the insulating course; and b) to determine its supporting value. HRIS 24. IRRD 700162. ACTIVE

(12) Comparison of the Air Void Content of Fresh and Hardened Concrete. Laboratory and field studies of samples of fresh and hardened concrete to determine if the check of the air void content of fresh concrete is sufficient for an assumption regarding the air voids in the hardened concrete. HRIS 32. IRRD 700110. COMPLETE

(15) Influence of the Petrographic and Granulometric Properties of Coarse Aggregates and Chippings on the Design of Unbound Bases. HRIS 35. IRRD 700604. ACTIVE

(17) Comparative Studies of Construction with Bituminous and Gravel Roadbases as Part of the Rebuilding of the L614 (Waldorf-Nussloch). H. Luecke, A. Gerlach. HRIS 62. IRRD 701501. COMPLETE

(18) Total Evaluation and Final Report of Studies at the Hilpolstein Experimental Section. H. Luecke, A. Gerlach. HRIS 62. IRRD 701510. COMPLETE

24. a. (19) Particle Displacement During Establization of Fine-Grained Washed Sands with Tar and Cement. HRIS 62. IRRD 701534. ACTIVE

(20) Effect of Concrete Mix Design on the Safety of Bonded Anchorage of Prestressed Wire Strands. Plaehn. HRIS 32. IRRD 701240. ACTIVE

(21) Determination of the Quality of Ballast-Chippings-Crushed Sand Mixtures which can be obtained during laying with Road Finishers. N. Hunger. HRIS 33. IRRD 701669. COMPLETE

(22) Effect of Petrographic and Granulometric Properties of Ballast and Chippings in the Design of Unbound Layers. HRIS 35. IRRD 701670. ACTIVE

(23) Factors which Determine the Design of Roadbases Stabilized Hydraulically and by other means. HRIS 62. IRRD 701672. ACTIVE

(24) Homegeneity of Unbound Roadbase Mixtures. HRIS 62. IRRD 701677. COMPLETE

(25) Effect of Subsoil Stiffness, Layer Thickness, Features of the Stockpile and Loading on the Deformation of Layers of Unbound Mineral Aggregates. HRIS 62. IRRD 701678. COMPLETE

(26) Determination of the Composition of Concrete by means of a Stereological Method. HRIS 32. IRRD 701695. ACTIVE

(27) Resistance of Concrete Kerbs to Frost and Deicing Salts. HRIS 40. IRRD 701696. ACTIVE

(28) The Bearing Capacity and Cracking of a Road Having a Cement-Stabilized Sand Base on the A2 Federal Motorway. A study of cracks which have occured in a Class 4 road which has carried Class 1 traffic for three years, and their effect on the whole structure. HRIS 24. IRRD 701916. ACTIVE

(29) Testing of a Method for Predetermining Rut Depths, Taking the Example of the Hilpoltstein Experimental Road. A test of a method of calculating plastic deformations of bituminous layers that could lead to rutting. H. Luecke, A. Gerlach. HRIS 24. IRRD 702011. COMPLETE

(30) Design of Flexible Road Pavements by Means of the U.S. DOT Computer Program VESYS. To check this program as it may provide information on the formation of ruts, longitudinal irregularities and cracks. H. Luecke, A. Gerlach, W. Schwaderer. HRIS 24. IRRD 702015. ACTIVE

(31) Improvement of the Standard of Evaluation and Reproducibility in the Frost Deicing Salt Testing of Road Concrete in the Laboratory. The use of current method for testing resistance of concrete products to salt to test concretes having undergone some modifications. H. J. Wierig. HRIS 32 IRRD 702028. ACTIVE

New Project

(32) Dependence of the Quality Properties of Hydraulically Bound Materials, Determined in the Proctor Test on the Dimensions of the Testing Cylinder and on the Largest Particles. The effect of the cylinder size in the proctor test and the directly related maximum particle diameter on the bulk density which can be acieved with specified compactive effort, the optimum moisture content and the strength of samples of hydraulically bound materials is to be determined. H. J. Wierig. HRIS 62. IRRD 702145. ACTIVE

24. b. Institute of Transportation Economics, Roads and Urban Planning: Callinstrasse 15a, D-3000 Hannover.

(7) Establishment of a Basis of Comparison for Parking Arrangements in Residential Areas. To study long and short time parking, determine needs and make recommendations. W. Grabe, I. Miloschewsky. HRIS 54. IRRD 701000. ACTIVE

(16) Evaluation of the Availability of Traffic Services. HRIS 40. IRRD 700570. INACTIVE

(17) Optimum Utilization of Buses, Trams and Rapid Trains. HRIS 12. IRRD 700571. INACTIVE

(18) Interaction Between Number of Parking Places Available and Traffic Volume. To define the parking spaces necessary for economic life in the town center and take into account the interactions between moving and parked vehicles. HRIS 54. IRRD 701411. ACTIVE

(19) Application of Optimum Calculation in the Design of Road Networks in Town Centers, Taking Account of Operation. Develop a generally valid method of calculacting optimum geometric design and operational control of an urban network having signal controlled junctions. HRIS 54. IRRD 701412. ACTIVE

d. Institute for Massive Construction: Callinstrasse 15, D-3000, Hannover.

(2) Effect of Transverse Construction on the Plate Cutting Moments of Twin-Web Plate Girder Bridges using Static Models. Testing of models of such bridges constructed of epoxy resin and quartz sand aggregate. K. W. Bieger. HRIS 25. IRRD 701816. ACTIVE

i. Institute for Motor Vehicle Design and Construction: Nienburgerstrasse 1, D-3000 Hannover.

(1) Forces Between Tire and Road. Development of a measuring device for, and the measurement of, transverse forces and the changing results of all the forces which occur between the tires of commercial vehicles and the road. F. Gauss. HRIS 24. IRRD 700116. COMPLETE

(5) Measurement of Force between Tire and Road on Commercial Vehicles. Especially Horizontal Forces. HRIS 24. IRRD 701655. ACTIVE

(6) Superposition for Vertical and Horizontal Forces on Commercial Vehicles. To determine vertical wheel forces and horizontal forces on curves and those caused by braking or accelerating. HRIS 53. IRRD 701788. ACTIVE

(7) Effects of the Vehicle Driver and Road Train Size on Pendulum Oscillations. To examine the extent to which the driver can control or prevent the lateral displacement of trailers by activation of the steering wheel. H. C. Pflug. HRIS 52. IRRD 701888. ACTIVE

(8) Effect of Tire-induced Stress Distributions in the Contact Area on Road Stress. A study of stress in contact areas of tires, which may not be constant as a result of horizontal stresses also present. F. Gauss. HRIS 24. IRRD 701996. ACTIVE

New Project

(9) Computer Determination of Road Stress Taking Account of the Rolling Movement of Vehicle Axles. Rolling Vibrations of the rigid axles of commercial vehicles caused considerable increases in the effective vertical loads on the road pavements. F. Gauss. HRIS 24. IRRD 702146. ACTIVE

24. k. Institute for Photogrammetry and Surveying: Same address.

(1) Analysis of Problems and Studies of Optimum Photogrammetric Data Processing for Digital Processing for Road Engineering Purposes. HRIS 21. IRRD 700620. ACTIVE

l. Institute for Steel Engineering: Callinstrasse 15, D-3000, Hannover.

(2) Comparative Calculations According to the Second Order Stress Theory to Check a Simple Form for the Design of Rigid Horizontal Struts between Scaffolding Beams. J. Scheet. HRIS 25. IRRD 700283. ACTIVE

(3) Plate Bulging Tests on Small Box Girders without Struts. Bearing capacity tests under combined shear and normal stress. Lacher. HRIS 25. IRRD 701818. ACTIVE

m. Institute for Construction Operations and Economics: Callinstr. 15, D-3000 Hannover

(1) Preliminary Comparison of the Time Taken to Build Motorways in France and in the Federal Republic of Germany. HRIS 11. IRRD 701540. ACTIVE

n. Institute for Massive Construction: Callinstrasse 15, D-3000, Hannover.

(1) Economical Construction of Reinforced Concrete Slabs. Development of a very fine concrete for producing models, the properties of which are similar to reinforced concrete construction, and the conducting of a number of tests on bond, stress distribution, etc. HRIS 25. IRRD 701385. ACTIVE

o. Institute of Geology and Palaeontology: Callinstrasse 15a, D-3000 Hannover.

(1) Relations between Rock Formation and the Behavior of Broken Natural Stones in the Frost Test. HRIS 64. IRRD 701675. ACTIVE

26. TECHNICAL UNIVERSITY OF KARLSRUHE (Universitat (TH) Karlsruhe): Kaiserstrasse 12, 75 Karlsruhe.

a. Institute for Traffic Engineering: Same address.

(20) Lane Changing on Carriageways. Develop methods of determining conditions which effect a lane change and also the relation between frequency of change and the parameters of traffic flow. HRIS 55. IRRD 701417. ACTIVE

(21) Traffic Flow on Gradients on Directional Carriageways. HRIS 55. IRRD 701421. ACTIVE

(26) Simulation of Traffic Flow on Motorways Having Two-laned Carriageways with Reference to Empirical Situations which cannot be adequately verified. Use of a microscopic model to study effects of recommended speeds rather than maximum speed limits on motorways and simulate traffic flow. R. Wiedemann, H. Hubschneider. HRIS 55. IRRD 701301. COMPLETE

(27) Simulation of Traffic Flow on Rural Roads - Extension of Models. HRIS 55. IRRD 701616. ACTIVE

(28) A Matrix Model for Determining Traffic Loads on Networks. HRIS 55. IRRD 701620. COMPLETE

GERMANY (contd)

26. a. (29) Effect of Traffic Restrictions and Structural Shape on the Safety of On-level Junctions Outside Towns not Controlled by Traffic Signals. HRIS 54. IRRD 701631. COMPLETE

(30) Dependence of Accidents on Traffic Flow on Urban Roads. HRIS 54. IRRD 701649. COMPLETE

(31) Measurement of Acceleration Distributions. To develop methods for measuring and estimating acceleration noise. HRIS 53. IRRD 701745. COMPLETE

(32) Studies of Optimum Time and Path Sections to Determine Traffic Flow-Stage 2. To study the extent to which models for forecasting traffic flow on directional carriageways can be used to supply information over longer distances. HRIS 55. IRRD 701741. ACTIVE

(33) Merging Traffic Procedure to Control Traffic at Bottlenecks. Part 2. To carryout further studies of "zip fastener" actions in merging of traffic on the approach to bottlenecks to traffic flow. HRIS 55. IRRD 701761. COMPLETE

(34) Reproduction of Strategy Table and Dynamic Basic Diagrams on a Graphic Illustration. To develop a suite of programs to produce a dynamic basic diagram together with the control strategy on a graphic illustration. HRIS 55. IRRD 701775. ACTIVE

(35) Lane Behavior of Vehicles on Main Roads Studied by Means of Following Journeys. Analysis of lane behavior of with oncoming traffic on bends and transition curves by means of following journeys and photogrammetric picture evaluation. W. Leutzbach. HRIS 55. IRRD 701982. ACTIVE

(36) Influence of Traffic Restrictions and Structural Shapes on Safety at On-level Junctions not Controlled by Traffic Signals Outside Urban Areas: Part 2. W. Leutzbach, W. Handschmann. HRIS 21. IRRD 701985. ACTIVE

New Projects

(37) Traffic Flow on Uphill Gradients of Carriageways. Part 2. The speed of cars in relation to traffic density, the proportion of heavy vehicles, the amount of gradient and the length of gradient are to be determined. W. Leutzbach. HRIS 55. IRRD 702129. ACTIVE

(38) Traffic Engineering Studies on the Effects of a Prohibition on Lane Changing on Two-Laned Carriageways. The aim is to work out a basis for supplementing the highway code. W. Leutzbach. HRIS 54. IRRD 702130. ACTIVE

(39) Measurement of Acceleration Distributions. Part 2. Verification, by means of simulation, of the measurements obtained in the first part of the research. Th. Winzer, W. Leutzbach. HRIS 55. IRRD 702131. COMPLETE

(40) Relation between Desired Speed and Relevant Characteristics of Traffic Flow on Motorways. To examine, on the basis of existing measurements, the interaction between desired speed and microscopic and macroscopic characteristics of traffic flow. W. Leutzbach. HRIS 55. IRRD 702132. ACTIVE

c. Illumination Institute: Same address.

(3) Development and Testing of a Method of Determining the Luminance Necessary in the Entry Zones of Road Tunnels. To determine if it is possible to form different categories for which defined values of luminance are to be provided at tunnel entrances. HRIS 51. IRRD 701758. COMPLETE

26. c. (4) Determination of Subjectively Required Entry Luminence in Road Tunnels, and Its Correlation with Visible Object Contrast. To determine which visual object correctly describes the driving task. W. Adrian. HRIS 21. IRRD 702063. ACTIVE

(5) Effect of Lighting Column Geometry on Psychological Glare. Study of a proposed method of evaluating the psychological glare from road lighting. W. Adrian. HRIS 21. IRRD 702064. ACTIVE

e. Institute of Road and Railway Construction: Same address.

(14) Comparison of Various Methods of Measuring Wear. HRIS 24. IRRD 700592. INACTIVE

(18) Collection of Data on the Relation Between Air and Surface Temperatures and Between Annual Figures of the Mileage of Representative Vehicles. HRIS 55. IRRD 701474. ACTIVE

(19) Effect of Temperature, Humidity and Type of Stone on the Behavior of Emulsions with Respect to Breaking, and the Time between Breaking and Complete Setting Including Condensation of the Emulsion Water. HRIS 31. IRRD 701508. COMPLETE

(21) The Influence of Asbestos on the Mechanical Properties of Asphaltic Surfacings: Part 2: The Binder - Asbestos Fibre System. HRIS 34. IRRD 701521. ACTIVE

(22) Testing the Comparability of Experimental Roads with Respect to Traffic and Accident Data (Coordination of TEMPO 130). To determine how far existing study and experimental sections of roads provide comparative results in respect to development of accidents and changes in traffic. M. Blumhofer. HRIS 54. IRRD 701302. COMPLETE

(23) Speeds at Junctions, at Danger Signs, on Bends and on Sections Subject to Speed Limits. HRIS 55. IRRD 701647. ACTIVE

(24) Evaluation of the Adhesion of Asphalts by Means of the Marshall Method. HRIS 31. IRRD 701685. COMPLETE

(25) Evaluation of the Accident Situation on Sections of Road with Negative Transverse Profile, Based on Expanded Data. To extend a previous study of three road sections to a total of seven and determine if the same results are obtained. HRIS 51. IRRD 701781. ACTIVE

(26) Evaluation of the Accident Situation on Sections of Road with Different Transition Curve Lengths and on Sections with Negative Transverse Profile where Gradients are Less than 1.5 Percent. To establish whether, on sections of road with varying lengths of transition curves, there is a general limit up to which it is useful to have transition areas combined with negative transverse profiles. HRIS 51. IRRD 701782. ACTIVE

(27) Basic Research into the Behavior of Vehicles on Wet Roads. The use of computer to analyze force measurements taken on all four wheels of a vehicle in a study of the effects of wet pavements. HRIS 53. IRRD 701785. ACTIVE

(28) Accidents Before and After the Incorporation of Grooves into Road Surfaces. An examination of the effect of proposed groove patterns and dimensions on road safety. HRIS 51. IRRD 701790. ACTIVE

26. e. (29) Measurement of the Relation between Rain Intensity and Water Film Depth, and Evaluation of Road Wetness. To relate the intensity of rain to the depth of water film resulting therefrom and study the local and temporal influencing factors. H.G. Krebs. HRIS 24. IRRD 702000. ACTIVE

(30) Mechanical Behavior of Asphalt Sample, Part 2. H.G. Krebs. HRIS 31. IRRD 702007. COMPLETE

New Project

(31) Evaluation of the Study on Technologies Applied to Safety on the Roads - from the Road Construction Viewpoint. It is hoped that this evaluation will produce ideas for research and development in road planning and construction. H. Krebs. HRIS 51. IRRD 702117. ACTIVE

f. Institute of Soil and Rock Mechanics: Same address.

(2) Rock Mechanics Comparative Study on the Effectiveness and Economic Efficiency of Stabilized Slopes. HRIS 63. IRRD 700599. ACTIVE

(5) Changes of Road Profiles as a Result of Creep in the Subsoil. HRIS 62. IRRD 701490. COMPLETE

(6) Acceleration of the Consolidation Process under Road Embankments by Means of Sand Drains. HRIS 62. IRRD 701667. ACTIVE

(7) Design Criteria for Flexible Embankment Culverts in Relation to the Behavior of the Fill Material. To work out better design criteria for flexible, membrane-like embankment culverts taking into account the variable behavior of non-cohesive fill materials. HRIS 63. IRRD 701906. ACTIVE

New Project

(8) Changes in the Profile of Roads as a Result of Creep in the Subsoil: Part 2: Convergence of Cuttings in Stiff Clay. A creep formula was produced from the results of the measurements taken and the results of laboratory and theoretical tests. G. Gudehus, E. Boesinger, D. Kolymbas. HRIS 62. IRRD 702147. COMPLETE

g. Institute of Construction Plant. Am Fasanengarten, D-7500, Karlsruhe.

(7) Effect of Mixing Time on Uniformity of Mixture Properties in Mixers for Road Concrete. HRIS 32. IRRD 701697. ACTIVE

(9) Criteria and Characteristic Values for the Selection of Earthworks Equipment for Road Construction - Stage 3. To develop methods of working out equipment needed for a given task using commercially available small computers. HRIS 41. IRRD 701905. COMPLETE

(10) Effective Methods and Equipment for Compacting Embankment Slopes and Embankment Shoulders. To study the capacity of compaction equipment and the cost of repairing defective areas where the larger equipment has caused complications. HRIS 41. IRRD 701907. ACTIVE

h. Institute for Concrete and Reinforced Concrete: Kaiserstrasse 12, D-7500, Karlsruhe.

(6) Influence of Temperature on the Effectiveness of Air-Entraining Agents. HRIS 32. IRRD 700617. ACTIVE

(7) Effect of Adhesion Joints on the Durability of Cement Mortar Repairs. HRIS 34. IRRD 701528. COMPLETE

26. h. (8) Fracture Tests on Reinforced Concrete Consoles by Altering the Degree of Reinforcement. F. P. Mueller. HRIS 25. IRRD 700940. ACTIVE

(9) Determination of Adhesion Stresses in Concreted Reinforcing Steels. F. P. Mueller. HRIS 25. IRRD 700966. (Citations) COMPLETE

(10) Stress on Structures Subjected to Vibrations. HRIS 25. IRRD 700994 COMPLETE

(12) Permissible Loading Plate Bending and Deformation. HRIS 25. IRRD 701278. COMPLETE

(13) Repair of Reinforced Concrete Structures with Shotcrete - State of the Art. To determine the state-of-the-art as a basis for a German specification. F. P. Mueller. HRIS 40. IRRD 700284. COMPLETE

(14) Effect of Adhesion Bonded Joints on the Durability of Cement Mortar Repairs. To check resistance of plastic adhesion bonded joints to weathering and deicing salts in the field. HRIS 34. IRRD 701933. ACTIVE

i. Institute of Construction Machinery and Motor Vehicle Manufacture: Same address.

(1) Forces in the Contact Areas of Motor Tires in Cases of Rapid Changes of Wheel Load, Veering and Bounce. Determination of tire forces in the contact area with dynamic wheel loads, in rapid steering maneuvers and with oscillating wheel impact, with a view to improvement of formulae for calculating driving dynamics. Kollman. HRIS 24. IRRD 700031. ACTIVE

k. Testing Institute for Steel, Wood and Stones: Same address.

(6) HUP Screws in Highway Bridge Construction. Static and dynamic tests on HUP connectors with bearing action related to friction. O. Steinhardt. HRIS 25. IRRD 700783. ACTIVE

(7) Groove Fillet Weld Connections; Modification of Weld Length/Width of Bar. Examination of the stresses in welded connection as related to the length/width ratio. O. Steinhardt. HRIS 34. IRRD 700784. ACTIVE

(8) Friction Tests with Silicate-Zinc Dust Color on Zinc Dust Foundation, and Other Coatings. Tests of the coefficients of friction developed by coatings on metals. O. Steinhardt. HRIS 34. IRRD 700785. ACTIVE

(10) Static Supporting Behavior of Welded Aluminum Connections. To obtain verified values of permissible stresses in aluminum connections manufactured in factories where welding conditions are similar as well as where welding methods are different. HRIS 34. IRRD 700908. COMPLETE

(11) Study of the Bearing Capacity of Steel Structures Having Level, Disc-like Stressed Plates by Means of Realistic Large Scale Tests. Part 3/4: Stiffened Full Wall and Box Girders. O. Steinhardt. HRIS 25. IRRD 701203. ACTIVE

(15) Studies of Connections in Rectangular Hollow Profiles Made of ST37 and ST52. HRIS 25. IRRD 700969. (Citations) COMPLETE

(16) Voids Caused by Overwelding of Manufactured Coatings. HRIS 34. IRRD 701281. ACTIVE

(17) Determination of the Bearing Capacity of Hollow Sections with Defective Butt Welds. HRIS 34. IRRD 701283. COMPLETE

26. k. (18) Studies of Connections of Rounded and Rectangular Hollow Sections Made of Steel ST 37 and ST 52 to Check the Design Charts in DIN 4116. To check the design diagrams on the effect of the lattice-belt-compressive stress on the bearing capacity of joint, the required structural safety and economic viewpoints. F. Mang. HRIS 25. IRRD 701863. ACTIVE

l. Department of Reinforced Concrete Construction and Construction Dynamics: Same address.

(1) Shear Reinforcement in Flat Slab Floors with Cap Reinforcement. Fracture tests on reinforced concrete models of flat floor slabs without support cap reinforcement to study influence on bearing capacity. F. P. Mueller. HRIS 25. IRRD 700788. ACTIVE

n. Institute for Economic Policy and Research: Kollegium an Schloss Bau IV, D-7500, Karlsruhe.

(2) Consideration of Growth and Structure Effects in the Recommendations for Economic Comparative Calculations in Road Construction. To develop a concept for measuring and evaluating effects of investment in main roads and the economic development of the regions concerned. R. Funck. HRIS 15. IRRD 702050. ACTIVE

p. Institute for Hydromechanics: Kaiserstrasse 10, D-7500, Karlsruhe.

(1) Vibration of Structures Caused by Flow. To make mathematical models to describe the vibrations caused by flow and thus contribute to design criteria. E. Naudascher, D. O. Rockwell. HRIS 22. IRRD 700285. ACTIVE

q. Institute for Construction Materials Technology: Am Fasanengarten, D-7500, Karlsruhe.

(1) Checking Methods of Determining Creep Coefficients of Concrete in Advance. To check the methods of predetermining these coefficients given in DIN 4227 and in CEB-FIP model Code 1978 with results of tests and compare with other methods such as ACI Committee 209 method. H. K. Hilsdorf. HRIS 32. IRRD 701865. ACTIVE

27. UNIVERSITY OF COLOGNE (Universitat Koeln): Universitaetstrasse 22, D-5000 Koeln

b. Institute of Transportation Economics: Same address.

New Projects

(6) Planning Strategies for Public Passenger Transport. To establish the principles for a discussion on strategy for setting out the conditions for efficient public passenger transport while satisfying the various regional, residential and demographic conditions. R. Willeke, G. Schild. HRIS 12. IRRD 702109 ACTIVE

(7) Criteria and Methods for Quantifying the Social Benefits from Public Passenger Transport to Obtain Standards for Government Decisions on Tariffs, Payments and Subsidies. R. Willeke. HRIS 15. IRRD 702110. COMPLETE

c. Institute for Economic and Social Statistics: Albertus-Mangus-Platz, D-5000, Koeln.

(1) The Accuracy and Handling of Accident Statistics. Study of the accuracy of accident statistics, using several methods for comparisons. K.A. Schaeffer, H. Dickmann, H.T. Forst. HRIS 51. IRRD 701332. COMPLETE

27. c. (2) Forecast of Accidents 1978. To evaluate accident forecasts for 1977 using three methods and to calculate 1978 accidents using five methods. K. A. Schaeffer, K. Sticker. HRIS 51. IRRD 701870. COMPLETE

28. TECHNICAL UNIVERSITY OF MUENCHEN: (Technishe Universitat Muenchen):
Arcisstrasse 21, D-8000, Muenchen 2.

a. Testing Center for Bituminous Materials and Plastics: Same address.

(11) Preparation and Statistical Evaluation of Correlated Analyses for the Study of Emulsion and Mastic Asphalt. The revision of DIN 1995 and of DIN 1996 calls for joint studies to be conducted by 30 to 40 institutions to evaluate methods of testing bituminous mixtures for use in road surfacings. HRIS 31. IRRD 701011. ACTIVE

(12) Determination of the Influence of Sampling on the Dispersion of the Results of Tests. Forty test centers will test similar samples of bituminous material to determine the possible effect of sampling on the spread of results of tests. HRIS 31. IRRD 701012. ACTIVE

(15) Possible Modifications of Specific Characteristics of Rock (Size, Shape and Strength of Particle) by Various Crushing Systems. Different rock types crushed in different types of machines will be tested to determine the relationship of particle shape to impact strength. HRIS 35. IRRD 701015. ACTIVE

(20) The Dispersion Range in the Determination of the Degree of Compaction in Bituminous Courses. Use of studies from 30 test centers to determine the relative dispersion ranges which occur in the determination of the degree of compaction in the construction of bituminous course. Schulze. HRIS 33. IRRD 700011. ACTIVE

(21) Factors in the Freezing - Thawing Cycle Testing of Aggregates. Investigation of the water saturation of aggregates, the nature, speed and duration of freezing, the thawing temperature, and speed and number of test cycles as a basis for the development of a new test method with automatic control to insure good reproductivity in freeze-thaw tests. Felix. HRIS 35. IRRD 700062. ACTIVE

(23) Influence of Particle Size on Impact Breaking Value of Chippings. Studies of the influence of the basic particle size used for testing on the impact breaking value of chippings, with special reference to the shape of the individual particles tested, the tests to be made on particles having a shape varying from very good to very bad. K. Schulze, R. Feix. HRIS 35. IRRD 700168. ACTIVE

(24) Experimental Road for Surface Dressings. Use of 5 different binders and 3 stone particle sizes on an experimental road, the sections having similar conditions and average traffic, with testing in accordance with existing specifications and evaluation after construction. HRIS 24. IRRD 700170. ACTIVE

(26) Continuation of the Determination of the Influence of Important Material Factors and Mixture Composition on the Wear of Bituminous Road Surfaces. HRIS 24. IRRD 700607. ACTIVE

(27) Supplementary Studies of the Influence of Sand Components on the Properties of Bituminous Mortars. HRIS 31. IRRD 700612. ACTIVE

(28) Influence of the Polishing Resistance of Aggregates on the Skidding Resistance of Asphalt Surfacings Built by Various Methods on the Motorway Test Section at Hofolding. HRIS 24. IRRD 701504. INACTIVE

28. a. (29) Influence of Particle Sizing, Type of Stone and Quantity of Fillers on the Durability of Gussasphalt Surfacings. HRIS 24. IRRD 701517. ACTIVE

(30) Development of Methods for Testing Joints in Plastic Sealing Surfacings. To test a number of methods of controlling the surfacing joints for cracking strength, flexibility during cold weather, etc. HRIS 34. IRRD 700286. ACTIVE

(31) Preparation and Statistical Evaluation of Group Analyses (DIN 1995 Bitumen and Cold Bitumen). To prepare, execute and evaluate these analyses as a part of the revision of DIN 1995. HRIS 31. IRRD 701919. ACTIVE

New Projects

(32) Testing of Little Used Minerals for Bituminous Layers (Hot Mix Foundation Layer): Part 1: Laboratory Tests. The object is to work out characteristic data on a number of these materials in the laboratory to serve as a criterion for possible future use. K. Schulze. HRIS 35. IRRD 702148. ACTIVE

(33) Group Analysis to Determine Testing Errors in the Testing of Road Tars (DIN 1995). The preparation, execution, and evaluation of the group analyses of the testing of road tars and cold tars to determine statistical values for repeatability and comparability. K. Schulze. HRIS 31. IRRD 702149. ACTIVE

(34) Group Analysis to Test Bitumen Emulsions and Cold Bitumen, DIN 1995. To prepare, undertake and evaluate group analyses to determine the repeatability and comparability of tests on bitumen emulsion specified in DIN 1995. K. Schulze. HRIS 31. IRRD 702150. ACTIVE

(35) Effect of Quality of Chippings on the Skidding Resistance and Life of Surface Dressings. The decrease in roughness is to be measured and the change in skidding resistance and reflectivity of the surface dressing at night and when wet is to be studied. K. Schulze. HRIS 24. IRRD 702151. ACTIVE

(36) Effect of Driving Speed on the Wear of Asphaltic Surfacings Caused by Studded Tires; Parts 2 and 3 - Continuation of the Measurements. Wear caused by studded tires increases significantly at higher speeds. K. Schulze. HRIS 24. IRRD 702152. COMPLETE

b. Materials Testing Institute for Construction Engineering; Theresienstrasse 90, D-8000, Muenchen.

(20) Safety Check for Large Bored Piles under Horizontal Impact Loading. To develop a design specification of large bored piles exposed to lateral impact of vehicles. H. Kupfer. HRIS 25. IRRD 701866. (Citations) COMPLETE

c. Institute for Internal Combustion Engines and Motor Vehicles: Schragenhofstrasse 31, Muenchen.

(4) Hysteresis and Coefficient of Friction of Rubber Compositions at Very Low Temperatures. Measurements in the range of their freezing points. A. W. Hussmann, W. Geyer. HRIS 34. IRRD 701018. ACTIVE

(7) The Influence of the Steering Characteristics on the Performance of the "Human Vehicle" Control System. To determine characteristics on which a driver's steering performance depends. A. W. Hussmann, D. W. Waldmann. HRIS 52. IRRD 701019. ACTIVE

(8) Pressure and Shear Distribution in Tire Contact Areas in Driven and Braked Conditions at Speeds up to 130 km/hr. Tests under condition of lateral slippage. A.W. Hussmann, M. Gerresheim. HRIS 24. IRRD 701020. ACTIVE

28. c. (9) Study of the Road Holding of Vehicles with Pneumatic Tires with Reference to Optimum Safety. Development of a computer program to study ways of minimizing the decrease in the road holding of vehicles due to unfavorable operating conditions. A.W. Hussmann, A. Pauly. HRIS 24. IRRD 701021. ACTIVE

f. Chair of Traffic and Municipal Planning: Same address.

(11) The Resistance Function in Models of Traffic Distribution Where Several Means of Transport are Available. A study, based on existing data from home surveys in large residential areas, of the nature and magnitude of the function "travel resistance given the availability of several means of transport together with development of theoretical methods and verification of model laws for the resistnace function. Schaechterle. HRIS 16. IRRD 700055. COMPLETE

(14) Traffic Assignment. Collection and putting into order literature already written and other information on the theme of traffic assignment. HRIS 55. IRRD 700149. ACTIVE

(16) Weighting of Environmental Criteria. To collect various methods of quantifying environmental criteria, supplement where necessary, and prepare a standard for use in road planning. K. Glueck. HRIS 17. IRRD 701742. COMPLETE

(17) Studies on the Representativeness of Written Household Surveys. To develop a proposal for the content and structure of questionnaires used in making household surveys for traffic planning. K. H. Schaechterle. HRIS 12. IRRD 701971. ACTIVE

(18) Relation between and Comparison of Individual and Aggregate Models for Estimating Traffic Demand. To determine generally valid data on the accuracy of information provided by these two models and their compatibility. K. H. Schaechterle. HRIS 13. IRRD 701974. ACTIVE

(19) Weighting of Environmental Criteria, Part 2. To make a survey of selected experts on the weighting of these criteria to be used in planning. K. Glueck. HRIS 17. IRRD 701970.

New Projects

(20) Evaluation of Exhaust Emissions in Road Traffic. A procedure for determining the most harmful emissions with reference to traffic and weather conditions and urban development, and for evaluating their short and/or long term effects is to be developed. K. Glueck. HRIS 17. IRRD 702111. ACTIVE

(21) Scope and Causes of Traffic Diversions (New Traffic) when New Sections of Urban Rapid Transit System are Opened. To obtain data on the effects on improvements in public transport, brought about by the opening or extending or urban rapid transit lines, on traffic behavior in the catchment area of these lines. K. Schaechterle. HRIS 13. IRRD 702112. ACTIVE

(22) Ways of Reducing the Standard of Construction and the Cross Sections of Main Roads in Built up Areas, Taking Account of the Built Environment. An attempt is to be made to see whether it is possible to reduce the standard of construction and the cross section. K. Schaechterle. HRIS 21. IRRD 702128. ACTIVE

g. Institute of Soil Mechanics: Paul-Gerhardt-Allee 2, D-8000 Muenchen 60.

(6) Comparative Studies on the Evaluation of the Plate Bearing Test. To select the method of evaluation which best describes the compaction of soil, irrespective of soil type. HRIS 62. IRRD 701799. COMPLETE

28. g. (7) Test Procedure for Soil Stabilization with Lime. A study of the strength development of lime treated samples and its relation to damp storage time and temperature during the storage time. HRIS 62. IRRD 701900. COMPLETE

(8) Creep Stability of Soils. Part 2. To improve understanding of the creep process and make contribution to future research in the field of microscopic creep behavior. HRIS 61. IRRD 701903. ACTIVE

(9) Stabilization of Soils with Organic Admixtures. A study of stabilization of organic soils with cement, lime, and bitumen. HRIS 62. IRRD 701904. ACTIVE

(10) Modification of the CBR Value in Relation to the Execution of the Test and Age of the Sample. To indicate the dependence of the results of the test with respect to storage after compaction, immersion in water, soil moisture content during compaction and the compaction effort. R. Jelinek. HRIS 62. IRRD 702001. ACTIVE

(11) Modification of the E-Index-V-Values of the Plate Bearing Test in Relation to the Time Compacted Fills have been Laid. A study of plate bearing tests made at varying intervals after fills have been laid, noting moisture content during laying and the type of compaction equipment used. R. Jelinek. HRIS 62. IRRD 702003. ACTIVE

i. Geographical Institute: Same address.

(1) Simulation Model of Commuter Phenomena in the Munich-Augsburg Region. Model simulation for analysis of commuter behavior and prognosis. V. Kreibich. HRIS 16. IRRD 701031. ACTIVE

j. Institute for Construction of Land Transport Routes: Thereseienstrasse, D-3000, Muenchen 2.

(12) Determining the Effect of Pauses in Loading on the Time-Dependent Shear Strength of Bitumen-Bound Roadbases. HRIS 24. IRRD 701515. COMPLETE

(13) Effect of Inclined Dowels on Extraction Resistance. HRIS 24. IRRD 701531. COMPLETE

(15) Strength with Time of Hydrautically Bound Roadbases According to TVT. HRIS 62. IRRD 701693. COMPLETE

(16) Measurements on Concrete Pavements Having Heat-Insulating and Stabilized Hydraulically Bound Bases. HRIS 62. IRRD 701699. COMPLETE

(17) Effect of Bituminous Spraying of Hydraulically Bound Gravel Roadbases under Concrete Surfaces on Bond. HRIS 62. IRRD 701700. COMPLETE

(18) Effects of Various Road Train Combinations on Stress on Bituminous Roads. A study of the effects on road life of positions, weights and tire pressures of wheels carrying vehicles. HRIS 24. IRRD 701786. COMPLETE

(19) Measurements on the Flexible Pavement Experimental Road Selb 2. Part 3 1977/79. Continuation of previously reported work. HRIS 24. IRRD 701918. COMPLETE

(20) Measurements on a Specially Constructed Unreinforced Concrete Surfacing on the Hamburg-Bremen Motorway. Part 2. Continuation of previously reported work. HRIS 24. IRRD 701926. COMPLETE

(21) Repair of Concrete Surfacing by Anchoring. To test a method of repairing cracks in which coated anchors or dowels are inserted into dovetailed slots and synthetic mortar poured over them. HRIS 40. IRRD 701932. COMPLETE

28. j. (22) Effects of Commercial Vehicle Construction on Road Stresses: Stage 1, Part A: Measurement on the Road: Part B: Measurement in the Vehicle. Experimental determinations of dynamic wheel load fluctuations, both on the road and in the vehicle. J. Eisenmann, G. Lyckauf, F. Gauss. HRIS 24. IRRD 701997. ACTIVE

(23) Model Tests to Determine the Effects of Cracks in the Roadbase on the Bearing Capacity of Concrete Surfacings. Laboratory and field measurements to determine the cooperative action of cement stabilized bases. J. Eisenmann. HRIS 24. IRRD 702021. ACTIVE

(24) Measurement of the Experimental Construction without Removal of the Subgrade on the Bremen-Hamburg Federal Motorway. Part 2. Continuing observations on a continuously reinforced concrete pavement built without removal of the existing subgrade, to note joint openings. J. Eisenmann, D. Birmann. HRIS 24. IRRD 702026. ACTIVE

(25) Experimental Study of the Bearing Capacity of Hydraulically Bound Sands under Concrete Surfaces. A study of the effect of roughness of a bonded sand roadbase surface on the bearing capacity and tightness of joints on a concrete pavement. J. Eisenmann. HRIS 62. IRRD 702049. ACTIVE

New Projects

(26) Effects of Commercial Vehicle Design on Road Stress-Stage 2A: Preliminary Tests to Quantify Wheel Load Dynamics. Part A: Measurements on the Road: Part B: Measurements on the Vehicle. A continuation of the research reported in IRRD research project 701997. J. Eisenmann, F. Gauss. HRIS 53. IRRD 702113. ACTIVE

(27) Strength in Time of Hydraulically Bound Roadbases in Accordance with TVT Specifications. Part 2. The extra series of tests should facilitate a better evaluation of rounded and broken stone. J. Eisenmann. HRIS 24. IRRD 702153. ACTIVE

(28) Measurements on the Experimental Section of Road on the Bremen-Hamburg Motorway, Part 2. Measurements showed that a uniform joint opening can be achieved if the bitumen coating on the longitudinal reinforcement near the joints is sufficiently thick. D. Birmann, J. Eisenmann. HRIS 24. IRRD 702154. COMPLETE

(29) Measurement on Concrete Surfacings with Heat-Insulating and Reinforced Hydraulically Bound Roadbases, Part 3: Measurements 1979/1981. Further measurements will be taken over a three year period. J. Eisenmann. HRIS 24. IRRD 702155. ACTIVE

k. Institute for Massive Construction: Arcisstrasse 21, D-8000 Muenchen.

(2) Checking the Theory of Cracking in Structures. A review of current literature, other measurements in other countries, and examination of cracks in completed structures. Daschner, Guckenberg. HRIS 25. IRRD 700801. (Citations) COMPLETE

(6) Long-Term Tests on the Action of Chloride on the Corrosion of Prestressing Steels in Concrete. A study of the action of chlorides on steel in concrete taking into account all other possible influences. HRIS 25. IRRD 700805. ACTIVE

(8) Effect of Corrosion Damage on the Strength Characteristics of the Reinforcement Steels of Torn Reinforced Concrete Elements. To obtain more reliable data on effect of load eccentricities. H. Kupfer. HRIS 25. IRRD 700807. (Citations) COMPLETE

GERMANY (contd)

28.	k.	(10)	Spirally Reinforced Columns: Theoretical Evaluation of Research Results. To develop a theory allowing load bearing behavior of such columns to be realistically determined. H. Kupfer. HRIS 25. IRRD 700810.	COMPLETE
		(13)	Full Joints Through Overlapping of Ribbed Steels Subjected to Tensile Stress. To extend the knowledge gained on tests of half joints to the behavior of full joints. H. Kupfer. HRIS 25. IRRD 700813.	COMPLETE
		(14)	Deflection Design of Lightweight Reinforced Concrete. Determine technological parameters for deflection design of high-strength lightweight concrete, and so improve design principles for better utilization and economic efficiency. H. Kupfer. HRIS 25. IRRD 700818.	COMPLETE
		(15)	Bonding Behavior of Reinforcing Steels under Continuous Loading in Both Normal and Lightweight Concrete. To derive basic laws on bonding for normal and lightweight concretes. H. Kupfer. HRIS 25. IRRD 700819.	ACTIVE
		(16)	Prestressed Re-bar Reinforcement in Prestressed Concrete Beams. To determine design rules for the use of prestressed re-bar reinforcement. H. Kupfer. HRIS 25. IRRD 700820.	COMPLETE
		(31)	Creep and Reverse Creep of Very Old Concrete. Measurement of initial and reverse creep on old concrete, some of which has been stored in unloaded state. H. Kupfer. HRIS 32. IRRD 700906.	COMPLETE
		(33)	Partial Prestressing. To establish additional design rules so as to limit cracking and fatigue behavior in practical application of partial prestressing in slabs. H. Kupfer. HRIS 25. IRRD 700927.	ACTIVE
		(34)	Principles of the Supporting Behavior of Overlapping Joints Subjected to Tensile Stress. Theoretical treatment of supporting behavior of overlapping joints, using photoelasticity tests, and to be followed by other studies. H. Kupfer. HRIS 25. IRRD 700928.	COMPLETE
		(36)	Development of a Generally Valid Bond Test Method. H. Kupfer. HRIS 25. IRRD 700947.	COMPLETE
		(39)	Stress Losses in Pretensioned Prestressed Concrete Elements. H. Kupfer. HRIS 25. IRRD 700953. (Citations)	COMPLETE
		(41)	Pull-out Tests on Structural Steels (Summary of Available Test Results). H. Kupfer. HRIS 25. IRRD 700967	ACTIVE
		(42)	Creep of Structural Lightweight Concrete. H. Kupfer. HRIS 25. IRRD 700992.	COMPLETE
		(43)	Crack Behavior in the Shear Region of Reinforced Lightweight concrete Beams and in the Region of the Transfer Length. H. Kupfer. HRIS 25. IRRD 700993.	ACTIVE
		(45)	Prestressed Shear Reinforcement in Prestressed Concrete Beams. H. Kupfer. HRIS 25. IRRD 701206.	COMPLETE
		(46)	Creep of Concrete Subjected to High Compressive Stresses. H. Kupfer. HRIS 25. IRRD 701207.	ACTIVE
		(49)	Buckling Safety of Reinforcing Bars Without Stirrups Subjected to Compressive Stress. H. Kupfer. HRIS 25. IRRD 701232.	COMPLETE
		(50)	Overlapping Sections in Tensile-Stressed Ribbed Steels in High-Strength Lightweight Concrete. H. Kupfer. HRIS 25. IRRD 701233.	COMPLETE

28. k. (55) Determination of Partial Safety Coefficients for Design Methods, with Special Reference to the Non-linear Relation Between Action and Stress. H. Kupfer. HRIS 25. IRRD 701237. COMPLETE

(56) Support Behavior of Deflection Members (Mortar Joints) Made of Precast Components. Determination as to whether such joints might be possible to use, although present specifications do not permit this. H. Kupfer. HRIS 25. IRRD 701238. COMPLETE

(57) Transfer of Longitudinal Force in Cracks in Normal and Lightweight Concrete. To determine the transverse force which can be transferred in cracks with reference to concrete strength, crack width, aggregate size, normal compressive stress in the crack and mutual displacement of the sides of the crack. H. Kupfer. HRIS 25. IRRD 701271. COMPLETE

(58) Effect of Crack Width in the Corrosion of Steel in Lightweight Concrete Studies after Five Years in Operation. H. Kupfer. HRIS 34. IRRD 701294. COMPLETE

(61) Safety against Shear Failure in Structures of Reinforced Lightweight Concrete. To determine if the specification for designing for shear in normal concrete can be applied to reinforced lightweight concrete. H. Kupfer. HRIS 25. IRRD 700290. COMPLETE

(62) Cooperation of Concrete with Tension Between Cracks in Determination of Second Order Moments for Tower-like Structures. A theoretical study to develop a method for designing the reinforcement in these tower-like structures. H. Kupfer. HRIS 25. IRRD 700291. ACTIVE

(63) Partial Prestressing: Corrosion Tests. To derive specifications for the corrosion resistant design of partially prestressed structures. H. Kupfer. HRIS 25. IRRD 700292. COMPLETE

(64) Reverse Creep of Lightweight Concrete having a Closed Structure. Determination of creep and shrinkage, together with reverse creep of this concrete, as a part of specification revision. H. Kupfer. HRIS 32. IRRD 700293. ACTIVE

(65) The Bearing Capacity of Deflection Members put together from Precast Elements (Synthetic Resin Bonded Joints) To determine if the segemental method of construction with bonded joints can be safely used. H. Kupfer. HRIS 25. IRRD 700294. COMPLETE

(66) Bond Characteristics of Reinforcement in Structural Elements Produced with Sliding Forms. A study of the bond characteristics when sliding forms are used. H. Kupfer. HRIS 25. IRRD 701820. ACTIVE

(67) Working out of a Test Specification for Concrete Admixtures with Respect to the Promotion of Hydrogen Embrittlement of Prestressing Steel in Concrete. To develop procedure for detecting potentially dangerous elements specific to prestressing steels. H. Kupfer. HRIS 25. IRRD 701821. ACTIVE

(68) Effect of Concrete Cover on Prestressed Members on Crack Widths near the Members when there is Partial Prestressing. To develop design formulas for calculating crack widths in partially prestressed structural elements and a procedure to check for retaining defined crack widths. H. Kupfer. HRIS 25. IRRD 701867. ACTIVE

New Projects

(69) Transmission Length of Prestressed Wires in Concrete B 55. To determine the transmission length of approved profiled and ribbed prestressing steels by means of pull-out and beam tests for high concrete strengths (B-55). H. Kupfer. HRIS 25. IRRD 702389. ACTIVE

New Projects

28. k. (70) Bearing Capacity of Precast, Stressed Deflection Beams with Cement Mortar Joints. To determine the bearing capacity of segmented deflection beams by means of compression tests on concrete prisms provided with cement mortar joints. H. Kupfer. HRIS 25. IRRD 702383. ACTIVE

o. Foundations and Soil Mechanics Department: Paul-Gerhardt-Allee 2, D-8000 Muenchen.

(1) Support Behavior and Bearing Capacity of Compression Anchors, Second Stage. Manufacture and testing of 12 anchors having three different compression member diameters, and to investigate transfer of force from tensile members to the compression body by strain gauges. R. Jelinek. HRIS 63. IRRD 700902. (Citations) COMPLETE

(2) Bearing Capacity of Soil Anchors. Determination of the influence of injection pressure and borehole diameter on the bearing capacity of soil anchors, with full scale tests being carried out in various types of soil. R. Jelinek. HRIS 63. IRRD 700903. (Citations) COMPLETE

(3) Support Behavior and Bearing Capacity of Injection Anchors, First Stage. Measurements of force required to cause failure in six types of injection anchors of varying length incorporated in four different soil types and loaded to capacity. R. Jelinek. HRIS 63. IRRD 700933. ACTIVE

(4) Safety Concept in Foundation Engineering in Relation to Safety Theory in Massive Construction. R. Jelinek. HRIS 62. IRRD 700999. ACTIVE

q. Institute of Psychology: Arcistrasse 21, D-8000 Muenchen.

(3) Influencing Following Behavior by Indicating the Course of the Road by Carriageway Markings. HRIS 54. IRRD 701441. COMPLETE

(4) The Effect of Smoking on Driver Behavior and Safety. A study of effects of various activities such as smoking, eating, use of casette recorders, etc., have on the control of the vehicle, either beneficial or detrimental. M. von Pupka. HRIS 52. IRRD 701303. COMPLETE

(5) Drawing up of a Situational Catalogue of Driving Activity. To provide data on the relative frequency and variability of certain demands and stresses which occur during driving. H. Galsterer. HRIS 52. IRRD 700242. ACTIVE

(6) The Frequency of the Occurence of Traffic Situations. To determine the demands made on the driver by typical journeys in the course of a year and classified from the point of view of the driver. H. von Benda. HRIS 52. IRRD 700243. COMPLETE

New Project

(8) Stress on Drivers in Relation to Road Traffic Conditions and Personality. Use of an instrumented measuring vehicle to observe physiological parameters and analyze driver behavior and performance. H. Galsterer. HRIS 52. IRRD 702343. (Citations) ACTIVE

r. Building Materials Testing Department: Theresienstrasse 90, D-8000, Muenchen 2.

(1) The Effect of Admixtures to Mortar and Coarse Aggregates on the Skidding Resistance of Concrete Surfacings subjected to Variable Mechanical Stress. HRIS 34. IRRD 701523. COMPLETE

(2) The Loosening of Synthetic Resin Coatings on Concrete Surfacings. HRIS 34. IRRD 701524. ACTIVE

28. r. (3) Improving the Resistance of Concrete to Frost and De-icing Salt by Impregnating Those Areas Used and Sealing Those Areas Not Used. HRIS 34. IRRD 701525. COMPLETE

(4) Penetration Depths of Chlorides Into Concrete. HRIS 34. IRRD 701526. ACTIVE

(5) Influence of the Smallest Grains of Sand on the Resistance of Concrete to Frost and De-icing Salt. HRIS 34. IRRD 701535. ACTIVE

(6) The Effectiveness of Sealing Slurries in Engineering Structures in Preventing the Infiltration of Ground and Seepage Water. R. Springenschmidt, D. Schumann. HRIS 34. IRRD 700975. COMPLETE

(7) Experimental Studies of the Relation between the Strength Properties of Aggregates and Road Concrete. HRIS 32. IRRD 701679. ACTIVE

(8) Mechanism of Disintegration of Concrete under Stress by Frost and De-icing Salt. HRIS 32. IRRD 701701. ACTIVE

(9) Determination of the Penetration Depth of Impregnating Agents in Relation to Concrete Moisture, Taking Account of the Pretreatment of Concrete Roads and Structural Elements which are not Trafficed. HRIS 32. IRRD 701702. ACTIVE

(10) Impregnation of Concrete, Execution during Unfavorable Weather, Skidding Resistance and Frost/Deicing Salt Resistance. Study of the range of temperatures during which these impregnating agents can be used. HRIS 34. IRRD 701934. ACTIVE

(11) Obtaining Frost-Deicing Salt Resistance of Concrete by Means of Special Methods without the Admixture of Air Entraining Agents. To establish whether a concrete resistant to frost and deicing salts can be produced by using other measures, such as wax balls. R. Springenschmid. HRIS 32. IRRD 702024. ACTIVE

New Projects

(12) A Study of the Resistance to Adhesion of Plastic Mortars on Concrete Surfaces. The effect of temperature and moisture changes and of mechanical loading of the subsoil is to be studied. R. Springenschmid. HRIS 62. IRRD 702165. ACTIVE

(13) Effect of Moisture Content During the Construction of Bound Roadbases on Cracking. To determine the optimum moisture content for hydraulically bound bases in relation to the cracking of bases. R. Springenschmid. HRIS 62. IRRD 702156. ACTIVE

s. Institute for Civil Engineering: Arcisstrasse 21, D-8000, Muenchen 2

(2) Coordination of Regionally Obtained Technical Traffic Data - Comparison and Evaluation of Results. To evaluate possibly varied effects of recommended and maximum speeds on traffic flow and accidents, data obtained are being summarized and characteristic values determined. H. Keller, K. Hampe, W. Mueller. HRIS 51. IRRD 701304. COMPLETE

(3) Methods of Analyzing the Efficiency of Systems for Influencing Traffic, Taking the Example of the Rhein/Main Test Area (Preliminary Study). HRIS 54. IRRD 701645. COMPLETE

(4) Case Study for Comparing Methods of Analyzing the Efficiency of Traffic Control Systems, Taking the Example of the Rhine/Main Test Area. HRIS 54. IRRD 701771. ACTIVE

28. t. Institute for Automation: Gabelsbergerstr. 39, D-8000 Munich

(1) Use of Technical Control Methods to Improve Traffic Flow on Fast Roads - Measurement Data Recording and Processing. HRIS 55. IRRD 701453. COMPLETE

u. Institute for Water Conservation and Hygienic Engineering: Arcisstrasse 21, D-8000, Muenchen 2.

New Project

(1) Report of Drainage Studies for the Design of Purification Plants for Federal German Motorway Service Stations and Rest Areas. The studies are intended to provide for revisions in the standard recommendations for the design of water purification plants for motorway rest and service areas. W. Bischofsberger. HRIS 23. IRRD 702099. COMPLETE

29. UNIVERSITY OF MUNICH (Universitat Muenchen): Geschwister-Schell-Platz 1, D-8000 Muenchen 22.

c. Institute of Forensic Medicine: Frauenlobstrasse 7A, D-8000, Muenchen.

(2) Frequency of Accidents in which the Safety Belt did not Contribute to Reducing Consequences. Analysis of accidents to see if the safety belt had a negative effect on injuries. G. Beier, H.R. Schwarz, E. Schuller. HRIS 51. IRRD 700244. COMPLETE

New Project

(3) Advantages and Disadvantages of Helmets and Other Safety Equipment Used by Riders of Motorized Two-Wheelers. An investigation of motorcyclists deaths and injuries in rural and urban Munich to determine effectiveness of protective clothing, particularly the crash helmet. G. Beier, E. Schuller. HRIS 51. IRRD 702360. ACTIVE

d. Institute of Meteorology: Theresienstrasse 37, D-8000, Muenchen.

(1) Study of the Gustiness of High Winds to Create Principles for Establishing Loads on Structures Sensitive to Wind Vibration. Evaluation of gusting winds in relation to height above ground level. H. Schroers. HRIS 25. IRRD 700295. ACTIVE

31. CIVIL ENGINEERING SCHOOL, TECHNICAL COLLEGE BOCHUM (Staatliche Ingenierschule fur Bauwesen): Ickerottweg, 435 Recklinghausen-Suderwich

(5) Effect of the Distribution of Particle Shapes in Chippings, Gravel, Crushed Stone and Sand on their Resistance to Impact, Bulk Density and Stability. A. Poe. HRIS 35. IRRD 701038. ACTIVE

32. UNIVERSITY OF THE SAARLAND (Universiraet Saarlandes): Universitaetskliniken, D-6650, Homburg/Saar.

b. Driving Aptitude Study Centre: Same address.

(1) Development of an Information Brochure and a Questionnaire for Drivers under the Influence of Alcohol (First Offenders). To produce this brochure and questionnaire with the aim of reducing proneness to recidivism of first offenders. A. Mueller. HRIS 52. IRRD 700245. COMPLETE

32. c. Institute for Legal Medicine: Same address.

(1) Checking of Drugs in Drivers Who Have Committed Traffic Offenses. Examination of blood samples from drivers who have committed traffic offenses for the possible presence of drugs. Moeller, H. J. Wagner, Biro. HRIS 52. IRRD 701890. ACTIVE

33. UNIVERSITY OF STUTTGART (Universitaet Stuttgart): Keplerstrasse 7, D-7000 Stuttgart.

a. Institute for Traffic Engineering: Keplerstrasse 11, D-7000, Stuttgart.

(24) Alignment of Longitudinal Slopes, Rounding of Dips and Summits in Connection with Grade-Separated Junctions. Investigation of the applicability of a dimensioning model for the determination of limiting values for access road profile alignment taking into account the superposition of the plan and profile layouts. B. Giesebrecht. HRIS 21. IRRD 700067. ACTIVE

(27) Relations Between Desired Accuracy of Traffic Surveys and Division of the Study Area in Large-Scale Traffic Surveys. HRIS 55. IRRD 700569. COMPLETE

(28) Significance of Internal Parameters of Traffic Flow on Roads. HRIS 55. IRRD 700572. COMPLETE

(30) Cross-Sectional Design of Single-Lane Ramps at Grade-Separated Junctions. HRIS 21. IRRD 700576. COMPLETE

(31) Evaluation of Various Conditions of Traffic Flow by Level of Service. To determine the extent to which desired speed could be attained in relation to traffic density, traffic composition and highway geometry. HRIS 55. IRRD 701410. COMPLETE

(32) Conditions Governing the Use of Merging Lanes and Distributor Roads at Grade Separated Junctions. A before and after study of road junctions carrying large traffic volumes to determine the effects of redesign and revision of road markings. HRIS 55. IRRD 701419. COMPLETE

(33) Visibility Distances at On-grade Junctions. Investigation of the effects of standard visibility specifications on traffic flow at intersections, particularly effect of cars parked within the prescribed clear triangle. HRIS 55. IRRD 701420. COMPLETE

(34) Control of Individual and Public Transport with Special Reference to Total Waiting Times. HRIS 16. IRRD 701442. COMPLETE

(35) Execution and Assessment of Monitored Journeys of Four Selected Experimental Road Sections. To register the characteristic motional values of motor vehicles monitored in relation to road characteristics and traffic flow, and results examined in relation to effects of maximum speed of 130 km/h on Federal Motorways. W. Schulze. HRIS 53. IRRD 701334. COMPLETE

(37) Traffic Flow at the Exits of Grade-separated Junctions Having a Decrease in Number of Lanes (Control Measurements). HRIS 55. IRRD 701622. COMPLETE

(38) Description of the Autocorrelation Function of Steady State Speed Processes. Analytical study of the relation between speed processes and the number of headways between vehicles. HRIS 55. IRRD 701748. ACTIVE

(39) Overtaking Behavior and Quality on Two-Laned Roads with Meeting Traffic. A comparison of moving traffic with queueing systems of variable lengths, and the characteristic values of these systems used to determine traffic flow, capacity and quality. HRIS 55. IRRD 701751. ACTIVE

33. a. (40) Carriageway Width Near Carriageway Dividers on Grade Separated Junction Access Roads. To determine if one or two lanes are needed in the vicinity of traffic dividers (islands) on these roads. HRIS 55. IRRD 701754. ACTIVE

(41) Effects of Various Characteristic Features inside and outside Built-up Areas on the Selection of Junction Elements. To determine elements needing to be designed differently in relation to characteristic features and if the design can be justified on basis of driver behavior. HRIS 55. IRRD 701755. COMPLETE

(42) Limits of Use and Design of Left-turn Lanes on Roads outside of Built-up Areas. To determine if there are economic and effective limits on lengths of these, and if they can be shortened. HRIS 55. IRRD 701756. ACTIVE

(44) Traffic Flow in Merging Areas Carrying Heavy Outside Streams of Traffic between the Entrance and Exit Ramps of Grade-Separated Junctions. To derive quality factors for determining permissible traffic densities in the merging areas of urban motorways. R. Schnuell. HRIS 55. IRRD 701981. ACTIVE

(45) Studies of the Signalization of Urban Road Networks with Particular Consideration of Existing Areas of Congestion. To determine the extent to which congestion at individual signalized intersections with small space can spread to other intersections on the network and how this can be controlled by increasing amount of green time in relation to the occupancy of the congested area. G. Steierwald, G. Heinz. HRIS 54. IRRD 701992. ACTIVE

New Projects

(47) Determination of Boundary Criteria for the Formation of Preferred Areas. As regards preferred areas the question is what size should they be, what conditions should they satisfy, and how should they be evaluated? G. Steigerwald, F. Jacobs, W. Vogt. HRIS 13. IRRD 702114. ACTIVE

(48) Coping with Public and Private Need for Parking Places in Old Built Up Areas Where Traffic has Been Restrained. To obtain information on the need for parking places in residential areas near towns in relation to structural data - distance to the parking place, purpose of journey and parking duration. R. Schnuell. HRIS 16. IRRD 702116. ACTIVE

b. Research Institute for Motors and Motor Vehicles: Martin-Schrenk-Weg 9, D-7000, Stuttgart 60.

(14) Testing of a Universal Friction Meter with a View to Determining Tyre Contact Coefficients Under Slip. HRIS 24. IRRD 701468. ACTIVE

(16) Testing Future Skidding Resistance Measuring Tyres for Agreement between Measuring Indicators. HRIS 24. IRRD 701470. ACTIVE

(17) Comparability of Tyre-Road Adhesion Coefficients. HRIS 24. IRRD 701471. ACTIVE

(19) Systematic Study of the Skidding Resistance of Dry Carriageways. HRIS 24. IRRD 701482. ACTIVE

(20) Development of a New Measuring Wheel Suspension for the Stuttgart Friction Meter. Part 2. HRIS 24. IRRD 701483. COMPLETE

(21) Development and Testing of a Method of Quantifying the Formation of Spray in Relation to Road Surface Texture and the Vehicle. (Formerly IRF 11a (3)). HRIS 24. IRRD 700593. COMPLETE

(22) Relation between the Coefficient of Sliding and the Coefficient of Tire-Road Adhesion, Calculated from the Deceleration of a car. HRIS 24. IRRD 701657. ACTIVE

33. b. (23) Simultaneous Measurement of Dynamic Wheel Load and Braking Force on Roads, and Optimization of the Vibration Damper on the Stuttgart Friction Meter. HRIS 24. IRRD 701659. ACTIVE

(24) Influence of a Film of Grease on Road Skidding Resistance. HRIS 24. IRRD 701660. ACTIVE

(25) Relations Between Placement Technology and Skidding Resistance. HRIS 24. IRRD 701692. ACTIVE

c, Institute for Massive Construction: Pfaffenwaldring 7, D-7000, Stuttgart 7.

(11) Determination and Evaluation of Foreign Research in the Field of the Shear and Torsional Bearing Capacity of Reinforced and Prestressed Concrete Structures and the Influence of the Alignment of the Reinforcement, F. Leonhardt. HRIS 25. IRRD 700795. COMPLETE

(16) Theoretical Studies of the Relation between Cooperation of Concrete Between Cracks, and the Type, Height, Time Function and Duration of Loading. F. Leonhardt. HRIS 25. IRRD 700990. ACTIVE

(17) Full Scale Test to Check the Safety Against Punching Through of Thick Foundation Slabs. To determine a limit value for shear stress at failure of slabs due to punching through. J. Schkaich. HRIS 25. IRRD 701822. ACTIVE

(18) Development of a Design Diagram for Calculating Foundation Slabs with and without Shear Reinforcement. An evaluation of tests on foundations to determine the punching through of foundation slabs as related to the degree of bending reinforcement and the absolute slab thickness. J. Schlaich, H. Ditrerle. HRIS 25. IRRD 701868. ACTIVE

New Project

(19) Behavior of Plate Girders Designed According to the Load Factor Method in Both the State of Use and Failure. To determine effects of the load factor method of design which have to be compensated for by means of constructional measures, and whether these measures also have an effect on the state of failure. J. Schlaich, Schaefer. HRIS 25. IRRD 702388. ACTIVE

d. Institute for Construction Engineering: Keplerstrasse 10, 7 Stuttgart

(1) Capacity of Road Construction Machinery. Empirical studies at road construction sites. G. Drees. HRIS 41. IRRD 701041. ACTIVE

(2) Methods of Constructing Arterial Roads. Development of all necessary details for planning and execution. G. Drees. HRIS 33. IRRD 701042. ACTIVE

e. Official Research and Materials Testing Institute for Construction (Otto-Graf-Institute): Pfaffenwaldring 4, D-7000, Stuttgart 80.

(1) Photoelastic Studies of Stresses in Pavements on Various Subsoils. To develop photoelastic techniques for studies of loads in pavement structures. G. Weil, P. Gotterbarm. HRIS 24. IRRD 701043. ACTIVE

(3) Influence of Fines on the Properties of Concrete. To determine the effect of fine crushed materials on the desired qualities of concrete. W. Albrecht, E. Hartmann. HRIS 32. IRRD 701045. ACTIVE

33. e. (11) Correlation of Seismically Determined Soil Coefficients with Conventionally Determined Soil Mechanics Coefficients. A series of tests at 5 sites using refraction seismology to determine dynamic modulus of stiffness, together with bore-holes to determine the geological layer of the structure, the results to be correlated with conventionally determined coefficients. K. F. Henke. HRIS 61. IRRD 700159. COMPLETE

(12) Principles for a Program of Tests to Study the Natural Stresses and Deformations in the Bituminous Deck-Surfacing-Bridge Deck Panel (Orthotropic Plate) Composite System Resulting from the Effects of Temperature. HRIS 25. IRRD 700610. INACTIVE

(14) Partial Structural Prestressing. Fatigue and corrosion tests on partially prestress girders. Walther, F. Rostasy, G. Schelling. HRIS 25. IRRD 700800. COMPLETE

(19) Behavior of Synthetic Resin Adhesive Layers on Orthotropic Steel Plates Under Thermal Stress. Use of a testing installation to enable steel plates covered in synthetic resin to be stressed by a hot liquid under simulated construction conditions, to evaluate the use of the resin as an adhesive layer. HRIS 34. IRRD 700177. ACTIVE

(20) Manufacture of Permanently Skid-Resistant Coatings (Laboratory Tests). HRIS 24. IRRD 700613. COMPLETE

(21) Long-Term Behavior of Epoxy Resins in Concrete Construction. Systematic studies of the long-term behavior of epoxy resin adhesive mortars for concrete and structural synthetic epoxy resin mortars and concrete. (See also IRF 16a (13).) HRIS 34 IRRD 700917. (Citations) COMPLETE

(22) Quadratic Single Foundations with Variable Reinforcement. Examination of factors influencing bearing capacity of foundation slabs, such as ratio support width to foundation width and ratio slab width to foundation width. F. S. Rostasy. HRIS 25. IRRD 700921. ACTIVE

(23) Long Term Observations at Selected Road Sections. Part 2. HRIS 24. IRRD 701463. ACTIVE

(24) Testing of the Binder Content of Mixes of Fine-Grained Soil and Lime, Hydraulic Lime and Cement. HRIS 62. IRRD 701499. COMPLETE

(25) Collating of Measurements on the Hilpoltstein Test Section and of Studies Made After the Section was Taken out of Operation. HRIS 62. IRRD 701509. ACTIVE

(27) Static (And Dynamic) Studies on Welded Connections in Aluminum Alloys ALMGSI1, ALMG4, 5MN and ALZNMG1. F. S. Rostasy, G. Werner. HRIS 34. IRRD 700970. ACTIVE

(29) Shear Bearing Capacity of Slabs Made of Reinforced Lightweight Concrete. F.S. Rostasy, R. Koch. HRIS 25. IRRD 701235. ACTIVE

(33) Suitability of Temporary Corrosion Protection Agents for Prestressing Steels. Analysis and testing of commercially available protective agents for their efficiency. G. Reim. HRIS 34. IRRD 701273. COMPLETE

(34) Influence of Admixtures on the Resistance of Young Concrete to Cracking during Rapid Drying out. W. Manns. HRIS 32. IRRD 701333. COMPLETE

(37) Calculation of the Properties of Rock by Ultrasonic Measurements. HRIS 61. IRRD 701666. COMPLETE

33. e. (38) Testing the Properties of Sealing Agents for Concrete Roads under Gussasphalt, and Working out of Recommendations for Testing. HRIS 34. IRRD 701687. ACTIVE

(39) Coating Elements for Concrete Roads and Non-trafficked Structural Elements. HRIS 34. IRRD 701694. ACTIVE

(40) Tests to Determine the Sensitivity to Corrosion of Reinforcing Steels, Particularly Prestressing Steels in Partially Prestressed Structures. A literature study and model testing of crack geometry and effects on type and extent of corrosion. G. Rehm. HRIS 34. IRRD 700296. COMPLETE

(41) Development of Test Procedures for Surface Treatments of Reinforced Concrete for the Repair and Prevention of Corrosion Damage. Development of test methods to evaluate durability and corrosion protection action of various measures. HRIS 40. IRRD 700297. ACTIVE

(42) Determination of Reasons for the Varying Initial Evenness of Roads. To establish by mathematical analysis whether surface condition depends on chance functions or if it is affected by external factors that are controllable. W. Schwaderer. HRIS 24. IRRD 701783. ACTIVE

(43) Testing of the Behavior Model Worked out During the AASHO Road Test by Means of Measurements Obtained from the Hilpolstein Experimental Road. To apply the AASHO Road Test Behavior Model to results from this experimental road where deviations occur. HRIS 24. IRRD 701920. COMPLETE

(44) Development of a Test Procedure for Evaluating the Effect of Curing Films on the Skidding Resistance of Road Concrete. Laboratory tests to determine the effect of curing agent on skidding resistance. HRIS 34. IRRD 701930. ACTIVE

(45) Wear and Skidding Resistance of Synthetic Resin Mortar Coatings on Concrete Roads not Subject to Stress by Studded Tires. Field and laboratory testing of such coatings. HRIS 34. IRRD 701931. ACTIVE

(46) Corrosion Promoting Action of Alkali and Alkaline Earth Thiocynates in Concrete Admixtures. To clarify the effects of alkali and alkaline earth thiocynates on the process of corrosion. W. Manns, W. Eichler. HRIS 32. IRRD 701823. ACTIVE

(47) Long Term Observations on Selected Sections of Roads. Part 3 (1977 - 79) Long-term observations of roads to produce a comprehensive picture of actual behavior, for the purpose of making estimates, carrying out cost benefit analyses and planning repairs. W. Schwaderer. HRIS 24. IRRD 701998. ACTIVE

(50) High Early Strength Cement. To investigate the possibilities of producing an early high-strength cement having sufficient voids content, both in a normal consistency or in a soft or pourable consistency. W. Manns. HRIS 32. IRRD 702022. ACTIVE

(51) Conversion of Previous Test Climate for Curing Agents to Normal Climate 20 Degrees C 65% and 23 Degrees C 50% Relative Humidity. To find a relation between water release values which result in the test climate of 30 degrees C 40% relative humidity and 20 degrees C 50% relative humidity and to work out a test procedure based on normal climates. W. Manns. HRIS 32. IRRD 702023. ACTIVE

33. e. (52) Collection of Experience on Large-area Coatings with Plastic Mortars, and Study of the Characteristic Values Required. To collect experience on the use of these mortars and determine if there would be a suitable means of mechanically applying the mixture developed in the laboratory. P. Jagfeld. HRIS 34. IRRD 702027. ACTIVE

New Project

(53) Joint Programme on Plate Buckling Tests 2, Research Area 6: Sub-Problems. Sub-Problem 6.2: Local Buckling of Compressed Hollow Struts, Especially Trapezoidal Hollow Struts. To conduct compression bearing capacity tests on a short folded hollow strut welded onto a strip-shaped metal basic sheet. H. Schmidt. HRIS 25. IRRD 702397. ACTIVE

h. Institute for Water Supply, Foundations and Hydraulic Works: Bandtaele 1 D-7000, Stuttgart.

(3) Condition of Road Surface Water in Relation to Air Pollution of the A81 Federal Motorway. To develop ways of preventing possible pollution of water reservoirs by road surface water. HRIS 22. IRRD 701797. COMPLETE

(4) Condition of Road Surface Water on the Bituminous Surfacing of the Federal Road A6 at Obereisesheim. K. Krauth. HRIS 23. IRRD 702004. ACTIVE

i. Institute for Foundation Engineering and Soil Mechanics: Pfaffenwaldring 35, Stuttgart.

(3) Development of a Suitability Test for Means of Protecting the Soil Formation Level, with Special Reference to Water Penetrating From Above. HRIS 62. IRRD 701496. COMPLETE

(4) Testing of Bituminous-Based Seals for Fine-and Mixed-Grained Soils Using Commercial Products. HRIS 62. IRRD 701497. ACTIVE

(6) Active Earth Pressure on Abutments and Retaining Walls in Relation to Subsoil Movements Caused by Embankment Fills. HRIS 63. IRRD 701665. COMPLETE

k. Department of Construction Materials: Pfaffenwaldring 4, D-7000, Stuttgart.

(1) Long-Term Behavior of Concrete Sections Glued Together by Means of Synthetic Resins. Study of glued joints subjected to combined shear and normal stresses and stored under different conditions, to serve as basis for establishment of permissible stresses on glued concrete joints. G. Rehm. HRIS 34. IRRD 700924. ACTIVE

(3) Rationalization of Reinforcement Technology. G. Rehm. HRIS 25. IRRD 701224. COMPLETE

(4) Fibre Concrete. G. Rehm. HRIS 32. IRRD 701225. ACTIVE

(5) Anchorage Lengths and Overlapping Sections of Welded Structural Steel Mats. G. Rehm. HRIS 25. IRRD 701230. (Citations) COMPLETE

(6) Studies of Oblique Crack Widths in Reinforced Concrete Structural Elements. G. Rehm. HRIS 25. IRRD 701231. COMPLETE

(8) Overlapping Joints of Reinforced Concrete Mats in Exposed Reinforced Concrete. G. Rehm. HRIS 25. IRRD 701266. ACTIVE

(9) Studies of the Behavior of Synthetic Resin Mortar and Synthetic Resin Concrete under Fatigue Loading. Determine behavior of this concrete under fatigue loading to evaluate supporting structures made with this material. G. Rehm. HRIS 32. IRRD 701275. (Citations) COMPLETE

33. k. (10) Fatigue Vibration Strength of Reinforcing Steels with Curvatures of at Least D-4d (e). Determine fatigue vibration strength of reinforcing bars. G. Rehm. HRIS 34. IRRD 701276. ACTIVE

(11) Influence of Reinforcement on the Support Behavior of Dowels in Normal Concrete. Develop reinforcement shapes or systems that will insure linking of areas of structures stressed by dowels with the whole cross section and which will prevent sudden tearing out of the dowel. G. Rehm. HRIS 25. IRRD 701277. ACTIVE

(12) Analysis and Evaluation of Damage to Prestressed Steels on the Basis of Available Knowledge. Analysis of damage to prestressing steels in failures of large structures and attempt to discover whether the current recommendations for avoidance of failure can be reconciled with the findings. G. Rehm. HRIS 25. IRRD 701366. COMPLETE

(13) Fatigue Strength of Welded Reinforced Concrete Connections. G. Rehm. HRIS 25. IRRD 700232. (Citations) COMPLETE

(14) Safety against Cracking in a Reinforcement Consisting of Bundles of Bars. A study of the use of reinforcing bars in bundles, including working out of specifications. G. Rehm. HRIS 25. IRRD 700298. COMPLETE

(15) Suitability of Open Stirrups for Shear Reinforcement in Plate Girders in the Region of Negative Moments. To work out specifications for using open stirrups near the tensile zone in plate girders. G. Rehm. HRIS 25. IRRD 700299. ACTIVE

(16) Effective Zone of Reinforcement. To derive an improved cracking formula and work out effective zone of the reinforcement from calculations of stress distribution in concert. G. Rehm. HRIS 25. IRRD 701388. ACTIVE

(17) Stress Corrosion of Prestressed Steels: Application of Results of Short Term Tests to Behavior Under Practical Conditions. To develop standard laboratory testing procedures which can be used to evaluate stress corrosion behavior. G. Rhem, R. Frey, U. Nuernberger. HRIS 25. IRRD 701389. ACTIVE

(18) The Question of Inclined Crack Widths in Prestressed Structural Parts. To extend the shear cracking formula for reinforced concrete elements to prestressed elements and design rules for shear reinforcement specified. G. Rehm. HRIS 25. IRRD 701824. ACTIVE

New Project

(20) Dowels in the Tensile Zone. To clarify the conditions under which the various dowelling systems are suitable for use in the tensile zone of surface supporting structures subjected to slight shear stress. G. Rehm. HRIS 25. IRRD 702385. ACTIVE

l. Institute for Steel and Wood Construction: Keplerstr. 11, D-7000 Stuttgart.

(2) Buckling and Support Behavior of Uniaxially Compressed Plates. Fischer. HRIS 25. IRRD 700959. (Citations) COMPLETE

m. Institute for Construction Economics. Postfach 560, D-7000, Stuttgart 1, Deutschland BR.

(1) Planning and Cost Orientation Values and Types of Costs of Service Facilities on Federal German Motorways. Planning and Cost data for various structures are to be determined. H. Kuesgen. HRIS 12. IRRD 702125. ACTIVE

34. RESEARCH ASSOCIATION "DER MENSCH IM VERKEHR" (Forschungsgemeinschaft "Der Mensch Im Verkehr"): Duerenerstrasse 140. D-5000 Koeln.

(16) Didactic Linking of the Highway Code and Education on Danger. To prepare new recommendations for the theoretical teaching of driving, with safety theory being a part of it. E. Spoerer, M. Jensch, H. D. Utzelmann. HRIS 51. IRRD 701305. COMPLETE

(17) Basic Study to Establish a Drinking Driver Typology. Analysis of habits relating to drinking, driving, and drinking and driving as a background for suspected drunken-driving offenders, associated with the development of a rehabilitation model for drunken offenders. E. Spoerer. HRIS 52. IRRD 701306. COMPLETE

(22) Studies on Alcohol and Driving - Traffic Education and Explanation Documentation. To develop and apply a means of documenting education measures on the subject. E. Spoerer. HRIS 52. IRRD 700246. ACTIVE

(23) Effects of Raising the Maximum Speed Limit for Buses on Motorways from 80 km/hr to 100 Km/hr. To examine the stress on bus drivers of this speed limit increase. E. Spoerer, R. Schippers. HRIS 52. IRRD 701871. ACTIVE

(24) Effects of Raising the Maximum Speed Limit for Buses on Motorways from 80 km/hr. to 100 km/hr. Interviews with Bus Drivers. To determine the attitudes of bus drivers to the raising of the speed limit. E. Spoerer. R. Schippers. HRIS 52. IRRD 701872. COMPLETE

(27) Retraining of Recently Qualified Drivers who have Committed Offenses: Execution and Evaluation of Retraining Courses for Young Recently Qualified Drivers. To conduct such courses and evaluate them with a view to revising the handbook for use of those who conduct the courses. E. Spoerer. HRIS 51. IRRD 701893. (Citations) COMPLETE

New Project

(28) Studies on Alcohol and Driving: Research Project on Traffic Education - Documentation - 2. To document measures undertaken to reduce drunken driving and an attempt to determine the effect of traffic educational measures on attitudes and behavior. E. Spoerer. HRIS 52. IRRD 702369. ACTIVE

35. RESEARCH ASSOCIATION FOR ROAD TRAFFIC AND SAFETY (Arbeits-und-Forschungsgemeinschaft fuer Strassenverkehr): Gyrhofstrasse 2, D-5000, Koeln.

(5) Evaluation of Accidents Involving Buses on Motorways. A study of bus accidents to determine extent to which speed at time of accident is relevant for the accident type and consequences. K. Engels, R. Dellen. HRIS 51. IRRD 701842. ACTIVE

40. MEDICO-PSYCHOLOGICAL INSTITUTE AND MAIN DEPARTMENT FOR MOTOR TRAFFIC, OF THE ORGANIZATION FOR THE INSPECTION OF VEHICLES AND DRIVERS FOR THE RHINELAND, COLOGNE (Medizinisch-Psychologisches Institut and Hauptabteilung Kraftfahrzeugverkehrs des Technische Uberwachungsvereins Rheinland in Koeln): Koeln

(8) Possible Use of Audio-Visual Aids in Driving Tests. To establish documentation on the possible use of audio-visual aids in driving tests, based on tests now being made in other countries, and determine whether it is feasible to represent adequately the tests in so-called safety theory. B. Hampel. HRIS 51. IRRD 701313. COMPLETE

(9) Ways of Standardizing the Practical Driving Test. To establish documentation which may serve as a basis for improving the official driving test, with special attention given to those elements relevant to safety. B. Hampel. HRIS 51. IRRD 701314. COMPLETE

40. (10) Effects on the Speed of Car Drivers in Urban Streets. Examination of the drivers perception of his structural environment and the traffic situation, factors determining his behavior, the effects of various types of road on speed, and effect of driving conditions on choice of speed. Buch. HRIS 52. IRRD 701894. ACTIVE

(11) Coordination and Effectiveness Study of the Re-education of Young Recently Qualified Drivers. To determine the effectiveness, and acceptance by the drivers, of the models developed for re-educating young drivers. H. D. Utzelmann. HRIS 51. IRRD 702329. ACTIVE

New Project

(12) Development of Instruments for Diagnosing Drivers Prone to Drinking Alcohol and for Early Recognition. Phase 1 - Setting Up and Pre-Testing of the "Alcohol and Driving Screening Instrument" (AFSI). To develop and test psychometric methods of early recognition of alcohol problems and a differential diagnosis of severity of the problem. M. Perrine, J. Nieswandt, R. Haas. HRIS 52. IRRD 702365. (Citations) COMPLETE

44. BAVARIAN TRADE INSTITUTE (Landesgewerbeanstalt Bayern): Gewerbemusuemsplatz 2 D-8500 Nuernberg.

(3) Filter Material Used in Drains. Studies to determine behavior of various types of filter material used in road drains, the studies covering permeability in relation to thickness, retention capacity of fine particles, tendency to crack from tensile stress, and behavior between two soil layers. HRIS 34. IRRD 700158. COMPLETE

(4) Effect of Primary Features of Aggregates on the Behavior of Asphalts - Part B: Fine Constitutent Formation from Sands as a Result of Dynamic Stress. A study of the effects of traffic on production of additional fines in bituminous pavements. HRIS 35. IRRD 702009. ACTIVE

46. GERMAN SHELL COMPANY, BITUMEN DIVISION (Deutsche Shell AG, Abt, Bitumen): Alsterufer 4-5. 2 Hamburg 36.

(1) Measurement of Deformation and Stresses in Flexible Road Structures. Behavior under dynamic stress, compared with values given by the multilayer theory. R. Dempwolff, P. Sommer. HRIS 24. IRRD 701053. ACTIVE

(3) Hilpolstein Test Section. Part B: Measurement of Stress and Deformation in the Road Paving. Use of strain gauges in measuring stresses and deformations of the paving on a detour section of the autobahn, the measurements being made of different depths with two gauges arranged longitudinally and transversely on each of the surface, base and foundation courses. HRIS 24. IRRD 701054. ACTIVE

(4) Hilpolstein Test Section, Part F: Measurement of Wear. Measurement of the wear on the pavement surface twice each year by the Shell method using plastic wear specimens. HRIS 24. IRRD 701055. ACTIVE

(5) Checking the Calculation of Stresses and Strains in Flexible Road Structures Under the Moving Loading Wheel (Hilpolstein Test Section). HRIS 24. IRRD 701507. ACTIVE

b. German Shell Company, PAE Laboratory: Hohe-SchaarpStrasse 34, D-2102, Hamburg 93.

(1) Effect of Compaction Procedures in the Laboratory and in Practice on the Resistance of Asphalt to Permanent Deformation. HRIS 31. IRRD 701683. COMPLETE

(2) Replacement of Benzene by Other Suitable Solvents in the Extraction of Bituminous Mixtures (DIN 1996, Part 6). A study of the quantitative recovery of bitumen from asphalts with the objective that the rheological properties of the binder are not modified. K.H. Guesfeldt. HRIS 31. IRRD 702013. ACTIVE

47. RESEARCH INSTITUTE OF THE CEMENT INDUSTRY (Forschungsinstitut der Zementindustrie): Dusseldorf.

(10) Water Bonding and Volume Change of Cement Paste. HRIS 32. IRRD 700962. ACTIVE

(11) Creep of Young, High-Strength Concrete. HRIS 32. IRRD 700977. COMPLETE

(14) Behavior of Concrete in Aggressive Carbonic Acid. HRIS 32. IRRD 700980. COMPLETE

(15) Composition and Properties of Concrete Aggregate. HRIS 32. IRRD 700981. COMPLETE

(16) Analysis of Hardened Concrete. HRIS 32. IRRD 700982. COMPLETE

(17) Strength of Cement Concrete. HRIS 32. IRRD 700983. COMPLETE

50. AUTOMATIC DATA PROCESSING COMPANY (Nordisk ADB): 4 Dusseldorf-Holthausen

(1) Investigation into the Accuracy of the Method of Setting up Digital Terrain Models. G. Waerner. HRIS 21. IRRD 701058. ACTIVE

51. INSTITUTE FOR CONSTRUCTIONAL COMPUTATION (Rechenlnstitut und Entwicklungsinstitut fuer Edv im Bauwesen): Schulze-Delitzsch-Strasse 28, D-7000, Stuttgart 80

(9) Design Data which take Account of the Settlement of Payment. To investigate ways of saving quantities and reducing costs of calculation by preparing data and quantities, taking into account final payment, during the design stage. HRIS 33. IRRD 701753. COMPLETE

52. NIES CONSULTING ENGINEER AND MATERIALS TESTING LABORATORY: Maarweg 233, D-5000 Koeln 41.

(4) Determination of the Effects of Aggregates on Asphalt Behavior. Part C: Shear Parameters, Dynamic Shear Models. To determine specific properties of aggregates which affect shear parameters and influence stability of bituminous-bound surfacings and base courses under heavy traffic loading. V. Nies. HRIS 35. IRRD 702008. ACTIVE

53. DR.-ING.C. CHRISTOFFERS: Baumbluete 11, D-4300, Essen

(3) Design Principles for Bus Lanes. To determine the design elements for bus lanes, such as length, width, position, making and signing, and volume of bus traffic. HRIS 21. IRRD 701757. ACTIVE

54. BERAT -ING. BODO GUENTHER: 2950 Leer-Loga Faehrstrasse 10A

(14) Development of Descriptions of Engineering Methods. Material to supplement the 'REB Collection," including pavement construction, areas and volumes for earthwork and structures, and others. Bodo Guenther. HRIS 33. IRRD 700065. INACTIVE

(15) Evaluation of Electro-Optical Determination of Terrain Quantities. HRIS 21. IRRD 700155. INACTIVE

56. F.H. KOCKS, CONSULTING ENGINEERS: Schloss-Strasse 18-20, D-5400, Koblenz

(4) Working out a Methodology for Undertaking Cost Benefit Studies for the Use of Traffic Signal Facilities: Stage 1. To determine the costs and benefits associated with installation and operation of traffic signals. HRIS 54. IRRD 701990. COMPLETE

New Projects

56. (6) Further Development of the Method for the Standardized Assessment of Road Investments. To produce a generally valid standardized method of evaluating public transport investments. Mann, Metz, D. Zumkeller. HRIS 14. IRRD 702115. ACTIVE

(7) Traffic and Town as an Interaction Mechanism. To construct a model for determining the effect of cost changes on the quantity and type of traffic. D. Zumkeller, Y. Zahavi, M. Poeck. HRIS 15. IRRD 702079. ACTIVE

57. NORDLABOR GMBH FUR BAUTECHINSCHE PRUFUNGEN: Pinneberg

(6) Testing of Concrete with a Plastic Coating Based on Epoxy Resin. Determination of basic conditions for the reliable plastic coating of concrete to protect it against mechanical and chemical stresses. Michalski. HRIS 32. IRRD 700748. ACTIVE

60. DORSCH CONSULTING ENGINEERS, LTD.: Friedrich-Bergius-Strasse 5, Postfach 9649, D-6202, Weisbaden-Biebrich

(17) Lighting of Junctions. HRIS 51. IRRD 701451. COMPLETE

61. TRAFFIC PLANNING ASSOCIATION (Arbeitsgemeinschaft Verkehrsplanung): Bahnhofstrasse 31, Aachen.

(3) Testing of the Application of the Opportunity Model as a Model of the Distribution of Individual Transport. Examine the possible application of the opportunity model used in the USA to German conditions, as this model is stated to give better results than that using the gravity model. HRIS 12. IRRD 701407. COMPLETE

62. SOCIETY FOR THE STUDY OF UNDERGROUND TRAFFIC INSTALLATIONS (Studiengeselschaft fuer Unterirdische Verkehrsanlagen e.V.): Mathias-Brueggen Strasse 41, D-5000 Koeln.

(6) Construction of a Large Scale Test Facility for Tunnel Linings. HRIS 25. IRRD 701229. ACTIVE

(7) Studies of the Behavior of Soft PVC Seals Subject to In-plane Forces and in the Area of Slowly Opening Structural Cracks. Study of the use of soft PVC membranes for sealing underground structures and their behavior subjected to in-plane forces, considering composition of the membrane, pressures, and temperature effects. Girnau, Haack. HRIS 34. IRRD 701368. COMPLETE

(8) Possibilities of Testing Seams in Single-Layer Plastic Seals in Tunnel Construction. To determine the weaknesses in current knowledge on the effectiveness of various methods of joint sealing and testing under building site conditions. Girnau, Klawa. HRIS 34. IRRD 701367. COMPLETE

(10) Use of Profiled Cords and Putties (Joint Sealants) in the Joint Sealing of Tunnels Made of Prefabricated Reinforced Concrete. To test field applications of profiled cords and putties in tunnel construction with precast elements with reference to joint design, water ingress, and the movements in the joint, and make recommendations to construction engineers. HRIS 34. IRRD 701280. ACTIVE

62. (11) Behavior of Loosely Placed PVC Soft Seals near Settlement Joints of Deep Engineering Structures. To provide qualitative and quantitative data on the relationship between water pressure, deformation of structure and failure of the seal. HRIS 34. IRRD 701827. ACTIVE

New Projects

(12) Measurements of Vibration Around Inner City Railway and Road Tunnels: Stage 1: Literature Evaluation and Trial Measurements. After trial measurements were evaluated a program of further measurements was worked out. G. Girnau, F. Blennemann, K. Gross, F. Krueger. HRIS 21. IRRD 702080. COMPLETE

(13) Mechanical Behavior of Bituminous Seals on Structures - Comprehensive Evaluation of Theoretical and Experimental Studies. To make a critical comparison of theoretical and experimental results obtained in recent years. HRIS 34. IRRD 702157. ACTIVE

87. OBERBAURAT DIPL.-ING. MITTMEYER: 5422 Goarshausen, Am Heidenstein 5.

(1) Evaluation of Recent American and British Literature on the Design of Roads and Satellite Sections. To supply abstracts, with conclusions, to various technical committees. Mittmeyer. HRIS 21. IRRD 701062. ACTIVE

92. DR.-ING STOLZ: Duesseldorfer Strasse 6, Duesseldorf-Oberkassel.

(3) Research Project Recommended Speed 130: Preparation of Accident Data with Reference to Traffic Density and Road Data from the Experimental Roads. Collection of accident, traffic and road data to be analyzed as a part of this project. J. Harders, E. Korte. HRIS 51. IRRD 701316. COMPLETE

(4) Catalogue of Criteria for Considering Environmental Viewpoints in Traffic Planning. HRIS 17. IRRD 701612. ACTIVE

(6) Optimum Duration of Amber Period at Traffic Signals. HRIS 54. IRRD 701648. COMPLETE

94. BERATENDE INGENIEURE DR.-ING. H. HUESCH AND DIPL.-ING. J. BOESEFELDT: Peterstrasse 2-4, D-5100 Aachen.

(23) Research Programme to Examine the Effect of a Recommended Speed Compared to a Maximum Limit on German Motorways: Applicability of the Results of the Tests to the Whole Network. An estimate of the probable trends in accidents and traffic flow over the entire network of motorways if either a recommended speed of 130 km/h or a maximum speed of 130 km/h were introduced. P. Reisbacher, G. Schmidt. HRIS 54. IRRD 701317. COMPLETE

(24) Space-Time Relations of Sunday Traffic Volumes in Urban and Suburban Areas. HRIS 55. IRRD 701615. COMPLETE

(25) Driver Behavior as Influenced by Series of Changeable Traffic Signs on Federal Motorways. HRIS 54. IRRD 701643. COMPLETE

(26) Vehicle-Activated Signal Control with Reference to the OPNV Study of Relations in the Control of Total Traffic Flow. HRIS 54. IRRD 701644. COMPLETE

(27) Comparison of Various Microscopic Control Methods of Vehicle-actuated Signal Control-stage 1: Development of a Methodology. HRIS 54. IRRD 701646. COMPLETE

94. (28) Measures for the Spatial-Temporal Modal Split of Road-Bound Public Passenger Transport. To assemble a catalog of measures and subject them to critical evaluation and subsequently derive criteria for application of the various measures. HRIS 16. IRRD 701746. COMPLETE

(29) Development of a Method and a Computer Program for the Best Possible Adaption of a Planned Road to an Existing Old Road as Part of an Optimization Procedure. To produce design principles for extending an existing road on the same alignment so as to reduce costs of improving sight distance and the cross section. HRIS 21. IRRD 701752. ACTIVE

(30) Communication with Road Users in the Rhine-Main Test Area Using Actual Measured Values. To develop means of audio-visual communication with road users. HRIS 54. IRRD 701766. COMPLETE

(31) Development of Automatic Process Computer Method for Evaluating the Traffic Engineering Effects of Control Measures. To examine the feasibility of an automatic evaluation of traffic flow and design one or several methods for accomplishing this in connection with signal control. HRIS 54. IRRD 701768. COMPLETE

(32) Calculation and Illustration of Evaluation and Optimization Criteria for Road Design. To evaluate and optimize criteria for computer-aided design. H. Heusch, J. Boesefeldt. HRIS 21. IRRD 701977. COMPLETE

(33) Study and Development of Criteria for the Switching off of Traffic Signals from Time to Time in the Urban Traffic Network. To develop criteria for switching off signals during periods of light traffic when safety would not be impaired. H. Heusch, J. Boesefeldt. HRIS 54. IRRD 701988. ACTIVE

(34) Comparison of Different Microscopic Control Procedures for Vehicle Activated Signal Control, Stage 2: Field Studies. A study of the factors involved in the control methods for influencing traffic flow at intersections, as well as a cost-benefit analysis. H. Heusch, J. Boesefeldt. HRIS 54. IRRD 701991. ACTIVE

(36) Decision and Optimization Models for the Practice of Traffic Planning, Part A: Optimization Procedures. To adapt procedures developed in the field of operations research to the requirements of road and traffic planning. H. Heusch, J. Boesefeldt. HRIS 12. IRRD 702061. ACTIVE

New Projects

(37) Development of Sets of Models to Determine Time and Operating Costs, as Part of the Economics of Road Construction. Models are to be attuned to existing recognized time and cost algorithms so that computer processing will be possible later. H. Heusch, J. Boesefeldt. HRIS 15. IRRD 702081. ACTIVE

(38) Criteria for Implementing Operational Measures for Improving Local Public Transport in Green Waves - Study of Traffic Engineering Effects. To examine certain case areas where operational measures have been implemented in order to determine the traffic engineering effects. J. Boesefeldt, H. Heusch. HRIS 54. IRRD 702127. ACTIVE

98. FEDERAL INSTITUTE FOR VEGETATION, NATURE AND LANDSCAPE PRESERVATION:
Heerstr. 110, D-5300 Bonn - Bad Godesberg 1.

(1) Landscape Planning and Road Planning. HRIS 23. IRRD 701425. COMPLETE

100. UNIVERSITY OF TUEBINGEN: Friedrichstrasse 21, D-7400 Tuebingen

a. Institute of Psychology: Same address.

(4) Role of the Instructors in Traffic Education and Possible Ways of Influencing This (Part 1). Develop a training program for parents of children not yet in school, structured according to theory of learning, taking account of child's state of development, and that will facilitate control of success by the parents. M. Limboug, W. D. Gerber. HRIS 51. IRRD 701319. (Citations) COMPLETE

(5) Dimensions of a Child's Traffic World. Collect available research results in subject of children in traffic, psychological and socio-psychological trends, and study relation between road accidents and other accidents incurred by children between 4 and 8 years. R. Guenther, M. Limbourg. HRIS 51. IRRD 701318. (Citations) COMPLETE

(6) Evaluation of a Package for the Traffic Education of 5 to 7 year Old Children with Particular Reference to the Possible Influence of Kindegartens. Testing the quality of training methods for women teachers and their effects on the activities of the teachers, parents and children. R. Guenther, D. Schoop. HRIS 51. IRRD 702330. COMPLETE

b. Institute of Geology: Same address.

(1) Effect of Reducing the Strength of Variously Strong Rocks on the Bearing Capacity of the Formation. HRIS 61. IRRD 701498. COMPLETE

107. DR. BECHERT: Teckstrasse 44, D-7000 Stuttgart 1.

(2) Working out of Principles and Designs for Prefabricated Prestressed and Reinforced Concrete Bridges. To prepare specifications and recommendations for precast bridges in order to provide construction authorities with criteria for evaluating these structures. HRIS 25. IRRD 701739. ACTIVE

108. INGENIEURBUERO DR.-ING. HANS GRASSL: Hohler Weg. 4 D-2000, Hamburg.

(5) Operational Strength of Cable-stayed Road Bridges. Part B - Operational Strength Studies of Bridge Cables. Studies of collective loads which actually occur on bridge cables, so as to check design principles. H. Grassl. HRIS 25. IRRD 701828. ACTIVE

(6) Spring-loaded Plates in Precast Bridges. A mathematical study of such plates under all conditions, with measurement of both model and completed structure. H. Grassl. HRIS 25. IRRD 701829. ACTIVE

113. FEDERAL RAILWAYS - CENTRAL OFFICE (Bundesbahn-Zentralamt): 8 Munich, Arnulfstr. 19.

(2) Studies to Guarantee the Weldability of Finishing Coatings on to Steel. To carry out studies on the effect of pores on the quality of weld seams in dynamically stressed structures. E. Hoffman. HRIS 34. IRRD 700702. COMPLETE

(12) Use Properties of High-Strength Structural Steels for the Steel Engineering Community Program. Static and dynamic tests of two high-strength steels, for welding and durability. E. Hoffman. HRIS 34. IRRD 700754. COMPLETE

(14) Impact Bending Tests on Reinforced Concrete Beams. Popp. HRIS 25. IRRD 700954. COMPLETE

GERMANY (contd)

117. DR. SCHOLZ ENGINEERING BUREAU: 400 Dusseldorf, Grunerstrasse 35

(3) Traffic Mobility in Relation to Service and Settlement Structure. HRIS 55. IRRD 701619. COMPLETE

New Project

(4) Influencing Regional Transport Networks by Linking Individual Transport with Public Transport. Data on traffic demand and on the associated networks are available from several studies. G. Scholz. HRIS 13. IRRD 702126. ACTIVE

118. GERMAN INSTITUTE FOR ECONOMIC RESEARCH (Deutsches Institut fuer Wirtschaftsforschung): Keoningin-Luise Strasse 5, D-1000. Berlin.

(3) Effects of a General Speed Limit on German Motorways on Demand for Vehicles. Economic Structure and Economic Growth. To determine if a general speed limit of 130 km/h would effect demand for motor vehicles, economic structure and economic growth. J. P. Weiss, J. Niklas, J. Schintke. HRIS 54. IRRD 701320. COMPLETE

New Project

(4) Re-Calculation of Road Costs for the Year 1979. Incomes, related to groups of vehicles, were compared to the total costs determined, and the degree to which road costs are covered were worked out. H. Enderlein. HRIS 15. IRRD 702082. COMPLETE

119. BATTELLE-INSTITUTE e.V.: Am Roemerhof, Postfach 90 01 60, D-6000 Frankfurt am Main.

(6) Study of the Anchorage of Safety Belts in Commercial Vehicles by Impact Simulation. A laboratory study of the effectiveness of safety belts on driver and front seat passengers. G. Rueter. HRIS 53. IRRD 700247. COMPLETE

(7) Effectiveness of Mobile Communication Devices, Part Project: Social Science Study of the Trial in Darmstadt. A trial of a car emergency radio system, with reactions to its use. G. Gutmann. HRIS 54. IRRD 700248. ACTIVE

(8) Analysis of the State of Development of Passive Accident Protection for Motorized Two-Wheeled Vehicle Riders. A state-of-the-art determination so as to prepare a complete research program on the subject. R. Rueter, P. Jessl. HRIS 53. IRRD 701804. (Citations) COMPLETE

(9) Documentation on Safety Belt Use Legislation and Problems of Injury. To determine from accident analysis and experimental studies the protection offered by safety belts. G. Rueter. HRIS 53. IRRD 701805. (Citations) COMPLETE

(10) Effectiveness of Three Point Safety Belts in Angled Collisions. To examine the protection offered by these belts with respect to loads on the vehicle occupants during an accident. H. Huntschik, P. Jessl, G. Rueter. HRIS 53. IRRD 701806. COMPLETE

(11) Impact Simulation Studies of the Anchorage on Safety Belts to Passenger Seats in Buses. To examine protection afforded by these belts and the protection of occupants during impacts. G. Rueter, H. Hontschik. HRIS 53. IRRD 701843. COMPLETE

122. ENGINEERING BUREAU FOR TRAFFIC RESEARCH (Ingenieurburo fur Strassenwesen): Kupferstr. 1, Aachen.

(5) Safety at the Entry Point of Grade Separated Junctions. HRIS 21. IRRD 701427. COMPLETE

122. (6) Usefulness of Staggered Junctions. HRIS 21. IRRD 701428. COMPLETE

(7) Effect of Lorry Lanes on Traffic Flow on Gradients of Two-laned Rural Roads. HRIS 55. IRRD 701623. COMPLETE

(8) Speed at Junctions. HRIS 55. IRRD 701626. COMPLETE

(9) Development of a Design Method Based on the Criteria of Traffic Quality and Economics (Stage 1). HRIS 21. IRRD 701630. COMPLETE

(10) The Effect of Unilaterial Traffic Lane Delimitation at the Entrances to Directional Carriageways on Traffic Flow and Safety. To undertake before and after studies to determine changes in traffic flow and accident rates due to unilateral lane demarcation. HRIS 55. IRRD 701773. ACTIVE

New Projects

(11) Effect of Pedestrians and Cyclists on Traffic Flow at Urban Junctions Controlled by Traffic Signals. The effect of pedestrians and cyclists on traffic flow at signal-controlled junctions has not been quantitatively determined except when there separate signals for non motorized traffic.K. H. Trapp. HRIS 54. IRRD 702083. ACTIVE

(12) Measurement and Testing of the Effect of Classes of Gradient in the Design Procedure RAS - Q. It is intended to measure the mean speed of cars in relation to traffic density and to check how the average speed deviates from the attainable speed.K.H. Trapp, HRIS 21. IRRD 702119. ACTIVE

(13) The Effect on Traffic Flow of Pedestrians and Cyclists at Junctions Uncontrolled by Signals. The object of the research is to study the two-way impairment by means of measurements at selected junctions. K.H. Trapp. HRIS 54. IRRD 702123. ACTIVE

(14) Calculation and Checking of the Effects of Curvature, Possibility to Overtake and Carriageway Width of the Design Procedure RAS-Q. It is intended to measure the average car speed which can be attained in relation to traffic loading for cross sections B2 and B2S.K.H. Trapp. HRIS 21. IRRD 702124. ACTIVE

125. GERMAN ACADEMY FOR TRAFFIC SCIENCE (Deutsche Akademie fur Verkehrswissenschaft): Nordkanal 36, Hamburg 1.

(1) Overtaking. An extensive statistical analysis of accidents occurring in overtaking, in which in addition to the Federal German Republic, England, France, Holland, Italy, Switzerland and Sweden are taking part. H. Lewrenz, W. Pittrich, E. Spoerer. HRIS 51. IRRD 701080. COMPLETE

128. DR.-ING. K. LOEFFLER, BAUSTOFFPRUEFUNG: Mellendorfer Strasse 7 D-3000 Hannover 61.

(5) The Compaction of Aggregates in Marshall Samples with Respect to Particle Composition, the Width of the Gradation Area and the Sample Size. HRIS 62. IRRD 701518. ACTIVE

(7) Control of the Effectiveness of Synthetic Resin Seals on Concrete under Bridge Surfacings. To determine the extent to which these seals have provided effective protection against deicing salts. K. Loeffler. HRIS 34. IRRD 701390. ACTIVE

128. (8) Study to Improve Sample Taking and Sample Distribution and Determination of Dispersions in the Sampling of Asphalt Mixtures. To determine the scatter caused by sampling and testing so that scatter caused by manufacture can be estimated. K. Loeffler. HRIS 31. IRRD 702010. ACTIVE

New Projects

(9) Group Analysis to Determine Errors in the Testing of Resistance of Sand to Weathering by Means of Frost and Crystallization Tests. Comparative studies are to be made in 11 testing centres to determine the errors in both the frost test and the crystallization test. K. Loeffler. HRIS 35. IRRD 702158. ACTIVE

(10) Laboratory Evaluation of the Frost Resistance of Hydraulically Bound Roadbases having Constituents which can Settle Amounting to 5-15 Percent of Weight. The constituents which can settle are to be varied for mixtures containing different aggregates. K. Loeffler. HRIS 62. IRRD 702159. ACTIVE

131. INSTITUTE FOR TESTING MATERIALS (Institute fur Materialprufung): Goellsdorfer STR. 13, Rottweil.

(3) Establishment of Areas of Scatter during the Execution of the Swelling Test. (DIN1996, Sheet 9). HRIS 62. IRRD 701682. COMPLETE

(4) Determination of Surface Tension of the Water on Asphalt Roads, and Establishment of Its Effect on Asphaltic Concrete Surfacings. HRIS 24. IRRD 701688. COMPLETE

132. DIPL.-ING. W. PEFFEKOVEN: 5205 St. Augustin-Hangelar, Moselstrasse 2.

(1) Wear on Road Surfaces. Systematic study of German and foreign literature with evaluation of the findings in order to obtain information from laboratory tests on the wear of road surfaces, with emphasis on methods checked and related to road test sections. HRIS 24. IRRD 700013. ACTIVE

136. DR.-ING. BRAND: Deutscher Platz 7. D-5060 Bergisch Gladbach 1.

(3) Continuation of Measurements on the Kirchhellen-Dorsten Experimental Road. Study of an experimental road built in 1972, with comparisons of evaluations made between 1972 and 1975 and those being made now. HRIS 33. IRRD 701910. ACTIVE

141. BAUSTOFF UND PODENPRUFSTELLE DARMSTADT: Wilhelm-Leuschner-Strasse 299. Griesheim.

(2) Surveying of Soils and Weathered Levels Above the Rock Line. HRIS 64. IRRD 700596. ACTIVE

(3) Testing of the Lime Pile Method for Improving Soft Cohesive Subsoils and Embankments. HRIS 62. IRRD 700598. ACTIVE

144. FEDERAL OFFICE FOR MOTOR VEHICLES AND TRAFFIC (Kraftfahrt-Bundesamt): Foerdestrasse Postfach, 783, D-2390, Flensburg.

(2) Evaluation of the Central Traffic Register as a Means of Controlling Efficiency. To examine, by means of random sampling, the effects of standards on driving license allocation, penalties, fines and other measures on traffic behavior of accident occurrence, so that trends in use of measures to increase road safety may be evaluated. H. Otto. HRIS 51. IRRD 700868. ACTIVE

New Projects

144. (3) Demand for the Frontal Illumination of Buses. To determine whether increased frontal lighting on buses would be needed if their speed limit should be raised from 80 to 100 km per hour. HRIS 53. IRRD 702368. ACTIVE

(4) Illumination of Brake Lights When the Retarder is Activated. To determine whether brake lights should be illuminated when the retarder on buses is activated when their speed limit is increased from 80 to 100 km per hour. HRIS 53. IRRD 702367. ACTIVE

145. INGENIEURBURO DR. OEDING: Am Hang 31, 2054 Geesthacht

(2) Determination of Characteristics Values of Five Special Test Sections for the Purpose of Comparing the Effects of Recommended Speed and Maximum Speed on Federal Motorways. D. Oeding, W.F. Pagels. HRIS 54. IRRD 701338. COMPLETE

(3) Effect of Glare Screens on Road Safety. To determine if such screens contribute to the reduction of accidents. D. Oeding, W.F. Pagels. HRIS 53. IRRD 701874. COMPLETE

146. ORGANIZATION FOR THE INSPECTION OF VEHICLES AND DRIVERS, BAVARIA: Kaiserstrasse 14, D-8000, Muenchen.

(6) Forces Acting Between Towing Vehicles (Tractors) and Lightweight Trailers (up to 3500 kg). To determine if the ISO recommendations for testing can replace the German procedures, and work out proposals for Common Market Legislation. K. Wartenberg. HRIS 53. IRRD 700249. COMPLETE

(7) Studies of Motor Vehicle Noise. Supplementary Studies of Motorcycle Noise According to the French Proposal R/1512/77 (ECO 172). Supplementary Study of the Noise of Small Motorized Bicycles (Mopeds) According to German and Dutch Specifications. W. Betzl. HRIS 17. IRRD 700350. COMPLETE

(8) Studies of Noise in Trucks and Buses. To measure noise in production line trucks and buses under various operating conditions to illustrate the extent of actual noise nuisance. HRIS 17. IRRD 701844. ACTIVE

148. UNIVERSITY OF FRANKFURT (Universitat Frankfurt), Psychiatric and Neurologic Clinic: Heinrich-Hoffman-Str. -10, 6 Frankfurt/Main.

b. Institute for Psychology: Mertonstrasse 17, D-6000 Frankfurt am Main.

(1) Studies of Special Symptoms when Driving in Speed Limits. To determine if driving for long periods on motorways subject to 130 km/h speed limit leads to greater psychic exhaustion, monotony or impairment of vigilance than similar journeys where there are recommended speeds and if this is apparent from particular aspects of driving behavior. U. Traenkle. HRIS 52. IRRD 701339. COMPLETE

149. UNIVERSITY OF BOCHUM: (Universitaet Bochum): Postfach 10 21 48, D-4630, Bochum 1.

a. Chair of Foundation Engineering and Soil Mechanics: Same address.

(1) Frost-Resistant Paving of Frost-Sensitive Sand Mixtures. Examination of conditions under which silty clayey gravel/sand mixtures stabilized with suitable binders are permanently resistant to frost. HRIS 62. IRRD 700161. COMPLETE

149. a. (2) Stability and Strength with Time of Unbound Aggregate Mixtures under Spatial Stress. HRIS 62. IRRD 701680. COMPLETE

(3) The Behavior of Soils of Varying Fine Particle Content under Load Impulses which Plasticize them. To create a more accurate forecast of the results of using the free-fall tamping method on various types of water-saturated soils containing fine particles. HRIS 62. IRRD 701902. ACTIVE

(4) Studies to Determine Stiffness and Deformation Data for Unbound Aggregates for the Design of Road Structures. To describe the material behavior of aggregate mixtures in terms of specific values of the stone. L. Jessberger. HRIS 35. IRRD 702006. ACTIVE

b. Institute for Structural Engineering: Universitaetstrasse 150, D-4630, Bochum.

(1) Technical Effects on Concrete Technology and Impact of These on the Manufacture of Steel Fibre Shotcrete. To determine the effect of admixtures on the resulting shotcrete. B. Maidl. HRIS 32. IRRD 701391. COMPLETE

New Project

(2) Effects on Concrete Technology and Rebound in the Manufacture of Steel Fibre Shotcrete. To study information obtained from preliminary tests on factors affecting rebound and concrete properties including admixtures, apportioning of steel fibers, mixing process and the use of ready mixed concrete. B. Maidl. HRIS 32. IRRD 702382. ACTIVE

(3) Joint Programme on Plate Buckling Tests 2, Research Area 2: Stiffened Sheet Metal Slabs. Sub-Programme 2.2: Sheet Metal Slabs Stiffened Longitudinally and Transversely with Realistic Boundary Conditions. To conduct plate buckling tests with various combinations of stiffeners. K. Roik. HRIS 25. IRRD 702390. ACTIVE

c. Traffic Engineering Institute: Same address.

(1) Useful Arrangement and Design of Parking Places in High-Density Built-up Areas. To develop solutions for the erection of parking facilities based on demand that meet requirement of users, provide environmental protection and can be efficiently operated. HRIS 54. IRRD 701749. ACTIVE

New Projects

(2) Determination of the Expected Demand for Cyclist Traffic in Relation to the Extension of the Cycle Path Network. To determine the potential demand for cyclist traffic in relation to the existing infrastructure. W. Teichgraeber. HRIS 16. IRRD 702084. ACTIVE

(3) The Effects of Traffic Control Operating Systems, with Particular Reference to the Noise Situation at Junctions. Recently controls for traffic signals have been introduced which enable the starting of vehicles to be avoided when the traffic flow is light. W. Teichgraeber. HRIS 54. IRRD 702122. ACTIVE

152. DIPL.-ING. G. HINTERLEITNER: Moerikestrasse 17, D-7000, Stuttgart.

(2) Recommendations for the Use of Simplified Traffic Survey Methods at Outer Cordons. To study a wide range of previous traffic surveys to recommend procedures for undertaking short term surveys in the future. G. Hinterleitner. HRIS 55. IRRD 701969. ACTIVE

152. (3) Determination of Operating Criteria for the Installation of Additional Elements in the Road Cross Section. To work out instructions for the addition of lanes other than those needed for operating, which is dependent on traffic loading and traffic composition. G. Hinterleitner. HRIS 21. IRRD 701978. ACTIVE

(4) Collection of Criteria for the Selection of Junction Types with Respect to Adjacent Sections from the Viewpoint of the Road User. To provide a specification for selection of junction types in urban areas. G. Hinterleitner. HRIS 21. IRRD 701979. ACTIVE

154. ILSEDER SCHLACKEN VERWERTUNG DR. SCHMIDT & CO., ZENTRALLABOR: 3152 Gross Buelten, Postfach.

(3) Determination of Magnitudes Affecting the Testing Accuracy of the Compression Test with Level Stamp in Accordance with German Standard DIN 1996 (Sheet 13). L. Voelkl. HRIS 62. IRRD 701514. COMPLETE

155. FRAUNHOFER ASSOCIATION FOR THE PROMOTION OF APPLIED RESEARCH (Fraunhofer-Gesellschaft zur Foerderung der Angewandten): Leonrodstrasse 54, D-8000, Muenchen.

(11) Operational Strength of Cable-stayed Road Bridges. Part A: - Determination of Traffic Loading and Operational Stress on the Superstructure. To collect data on the traffic loads which actually occur and the resulting load collectives in the stiffening materials. Zaschel. HRIS 25. IRRD 701830. ACTIVE

a. Laboratory for Operational Strength: Bartningstrasse 47, D-6100 Darmstadt.

(1) Determination of Traffic Loading on Road Bridges to Create Design Documents for Bridge Elements (Section 1). To establish loads which determine the design of the elements against vibration failure and compare them with static and total loads. Zaschel. HRIS 25. IRRD 701392. COMPLETE

156. ENGINEERING BUREAU FOR CIVIL ENGINEERING AND UNDERGROUND STRUCTURES (Ingenierbuero fuer Tiefbau und Unterirdische Bauwerke): Hessenlauweg 14, Stuttgart.

(1) New Method of Classification for Tunnel and Gallery Construction. Development of a classification system for evaluating rock types encountered in underground construction. H. Berger. HRIS 33. IRRD 700727. ACTIVE

(2) Underwater Bridges for River, Canal and Sea Crossings by Utilizing the Buoyancy and the Steel Coating as a Floating Body. Design of an underwater bridge that would provide a possible economic solution for underwater tunnels using the buoyancy of the tunnel as a floating body. H. Berger. HRIS 25. IRRD 700728. ACTIVE

157. WESTFALIAN MINING INSTITUTE, BOCHUM CABLE TESTING CENTER (West faelische Berggewerkschaftskasse (WBK), Seilpruefstelle Bochum): Dinnendahlstrasse 9, D-4630, Bochum.

(3) Development of Tensile Members in Massive Bridge Construction; Studies of Fully Closed Cables Produced from Galvanized Wires in Whole Cross Section of the Cable. Fatigue testing of galvanized wires to determine ductility and fatigue behavior. HRIS 25. IRRD 701393. COMPLETE

New Project

(4) Development of Tensile Members in Large Scale Bridge Construction: Studies on Completely Closed Cables Made from Galvanized Wire Across the Whole Cross Section of the Cable. To study completely galvanized cable to determine if corrosion and fatigue behavior is different from uncoated wire. K. Becker, H. Noeller. HRIS 25. IRRD 702398. COMPLETE

158. SOUTH GERMAN PLASTICS CENTER WUERZBURG (Sueddeutsches Kunstoff-Zentrum Wuerzburg): Frankfurterstrasse 15, Wuerzburg.

(3) Shrinkage of Synthetic Resin Mortar and Concrete. To clarify processes which take place in the micro area of filler and resin; develop simple test for determining shrinkage; and establish criteria for evaluating the influence of shrinkage on material and structure properties. HRIS 32. IRRD 701282. ACTIVE

159. STATE MATERIALS TESTING INSTITUTE (Saatliche Materialpruefungsanstalt (MPA): Pfaffenwaldring 32, D-7000 Stuttgart.

(3) Movements of Bridges Resulting from Temperature and Traffic Loading - Cumulative Glide Paths. To evaluate the movements of bridge bearings resulting from temperature and traffic loading and evaluate them with respect to sum of the glide paths during course of time. H. Uetz. HRIS 25. IRRD 701394. ACTIVE

(4) Design of Safety Belt and Survival Space with Reference to the Effects of Belts and Vehicle Interiors on Injuries and Checking the ECE Ruling. A study of beneficial effects of the use of seat belts, and the redesign needed to make them even more effective in eliminating contacts between head and steering wheel or dashboard. W. Laurcik, W. Strebel, L. Doebroesy. HRIS 53. IRRD 702231. ACTIVE

New Project

(5) Friction Behavior of PTFE White/Austenitic Steel for Bridge Sliding Bearings with Large Added Sliding Paths in Relation to Specific Loading. To conduct a sliding test on an extended glide path, with changing temperatures, on bearings made of a combination of PTFE white and austenitic steel. Hakenjos. HRIS 25. IRRD 702375. ACTIVE

160. E. LUDWIG: D-6227, Winkel.

(1) Plate Bearing Test at the Ernst-Mach Institute at Weil. A series of continuing tests on load-carrying and deformation behavior of reinforced slabs supported on two and four sides under impact loading by means of excess air pressure loads introduced within milliseconds. E. Ludwig. HRIS 25. IRRD 700733. ACTIVE

161. INSTITUTE FOR CONSTRUCTION WITH PLASTICS (Institut fuer das Bauen mit Kunststoffen e.V. IKB): Osannstrasse 37, D-6100 Darmstadt.

(2) Plastic Sheets for Seals in Construction. To establish a state-of-the-art of plastic materials used for sealing. HRIS 34. IRRD 701395. ACTIVE

166. BOCHUM UNIVERSITY, INSTITUTE FOR STRUCTURAL ENGINEERING: Buschestrasse 132. Bochum.

(4) Study of the Bearing Capacity of Steel Structures with Level, Disc-Like Stressed Plates by Means of Realistic Large Scale Tests. Part 2.2: Plate Spans Stiffened Longitudinally and Transversely and Having Realistic Boundary Conditions. K. Roik. HRIS 25. IRRD 701202. (Citations) COMPLETE

(5) Steel as a Permanent Securing Element in the Construction of Tunnels by Means of the Open Cut Method. Develop construction methods, make proposals for sections and structural forms, and highlight economic aspects of undertaking such contrasts. B. Maidl. HRIS 33. IRRD 701386. COMPLETE

166. (6) Bonding in Composite Structures Consisting of Precast and Cast In-situ Concrete - Structural Solutions and Construction Procedures. To examine bond between cast in-situ and precast concrete from structural, procedural, and economic angles and provide results directly applicable to industrial building. B. Maidl. HRIS 25. IRRD 701284. COMPLETE

(7) Industrialization of Cast In-Situ Concrete Construction Methods - Development of a Chain of Industrialization for Concrete Form Work. To investigate the possibility of such industrialization. B. Maidl. HRIS 33. IRRD 701285. COMPLETE

(8) Effect of Creep and Shrinkage of Concrete on the Bearing Capacity of Hollow Steel Supports Filled with Concrete. To determine long-term behavior of the concrete. Roik. HRIS 25. IRRD 701312. ACTIVE

(9) Computer Determination of the Limit of Bearing Capacity of Steel Composite Girders. Roik. HRIS 25. IRRD 700233. ACTIVE

168. ROAD CONSTRUCTION OFFICE HESSEN-MITTE: Am Gueterbahnhof, Wetzlar.

(1) Study on the Improvement of Blasting Work for the Safer Construction of Rock Slopes. HRIS 33. IRRD 700600. ACTIVE

169. GOVERNMENT CHAIR AT FREIBURG, DEPARTMENT OF ROAD CONSTRUCTION: Sautierstrasse 26, Freiburg.

(1) Simplification and Automation of the Plate Bearing Test. HRIS 24. IRRD 700602. ACTIVE

171. GUETEGEMEINSCHAFT BETONSTRASSEN e. V: Bellevue 30, Hamburg 39.

(1) Testing of the Measuring and Study Methods Used for Evaluating the Work of Concrete Spreaders and Finishers. HRIS 41. IRRD 700614. COMPLETE

173. BIELEFELD UNIVERSITY: Universitaetstrasse 1, D-4800, Bielefeld.

(1) Informal Signalling in Road Traffic. Examination of informal signalling by road users in regard to its function for the regulation and movement of traffic flow, including legal problems. K. Merten, W. Ziemann, R. Lisch. HRIS 54. IRRD 701341. COMPLETE

(2) Communications, Occurence of Conflicts and Behavior of Roads. Analysis of conflicts in road traffic, by the non-verbal behavior of road users. K. Merten, J. Meyer-Stolte. HRIS 52. IRRD 700251. ACTIVE

a. Working Group for Traffic Safety Research: Same Address.

(6) Classification of Features of Surveys. To produce a handbook containing proposals for classifying a number of selected traffic variables. W. Schulte. HRIS 55. IRRD 700252. COMPLETE

c. Faculty of Law: Postfach 8640, Bielefeld 1, D-4800

(1) Study of Legal Points Relating to Road, Traffic and Compensation to Promote Zones with Less Traffic by Traffic Assignment Measures. U. Steiner. HRIS 54. IRRD 701611. ACTIVE

d. Faculty for Sociology. Same address.

(2) Integrated Hypotheses Model for the Whole Complex of Studies on Drinking and Driving. To develop a detailed hypothesis model having corresponding operational-related variables, based on current literature. S. Karstedt-Henke. HRIS 52. IRRD 701846. COMPLETE

174. MANNHEIM UNIVERSITY: Schloss, D-6800 Mannheim

a. Department of Psychology III: Same address.

(2) Efficiency Studies of the German Safety Council Safety Training Programme. Study of the efficiency of the program within a framework of actual driving behavior, attitudes to traffic and practical and technical driving knowledge, using drivers in the 18 to 30 age group before and after safety training. U. Seydel. HRIS 51. IRRD 701344. COMPLETE

175. ORGANIZATION FOR THE INSPECTION OF VEHICLES AND DRIVERS (Technischer Ueberwachungs-Verein)

a. Hannover Location: Loccumer Strasse 63, Postfach 81 09 99, D-3000 Hannover

New Project

(6) Effectiveness of Courses for Alcohol-Prone Drivers. To evaluate courses for reeducation of alcohol-prone drivers by comparing frequency with which retrained and nonretrained drivers reverted to drink. W. Winkler, M. Oetting. HRIS 52. IRRD 702366. (Citations) COMPLETE

b. Hamburg Location: Grosse Bahnstrasse 31, D-2000 Hamburg.

(1) Influence of the Psycho-Physical Capacity of the Road User on Accidents. Collection of material on the subjects for the specialist area of medicine, with the exception of the effects of fatigue, alcohol and food, giving particular consideration to the methods, results, measures taken, and efficiency of these measures. H. Lewrenz. HRIS 52. IRRD 700875. ACTIVE

c. Cologne Location: Postfach 101750, D-5000 Koeln.

(3) Long-term development of Accident Occurence on Federal Motorways. Study of accident rates and trends, including comparison of rates on sections with maximum and with recommended speeds of 130 km/h. E. Eschbach, H. Schnadt. HRIS 51. IRRD 701347. COMPLETE

(4) Testing of a Measuring Procedure to Determine the Effects of Different Road Skidding Resistance on Vehicle Handling on Bends. Testing possible use of a test for measuring effect of different skidding resistance, on vehicle handling. HRIS 24. IRRD 701789. COMPLETE

(5) Handling of Car-Caravan Trains during Braking on Bends. Study of the effects of braking on bends by means of a mathematical simulation model. K. Burow. HRIS 53. IRRD 701847. COMPLETE

(6) State of the Art of Internal Safety in Buses. An assessment from the standpoint of safety of raising the permissible maximum speed limit on motorways for modern touring buses. K. Burow, H.J. Krueger. HRIS 51. IRRD 701848. COMPLETE

(7) Design of Bus Driver Working Area. An evaluation of the experimental raising of permissible maximum speed for modern touring buses on motorways from the viewpoint of possible increased demands on the bus driver. K. Burow, E. Donges. HRIS 53. IRRD 701849. COMPLETE

(8) Effect of Experienced Appropriateness of TEMPO 30 on Probability of Observance. Examination of the hypothesis that drivers pay more attention to a traffic sign if the road and traffic conditions appear to justify the sign. K. W. Herberg, R. Haas. HRIS 54. IRRD 701899. COMPLETE

175. c. (10) Determination of Requirements for Driving Test Locations. To collect practical requirement criteria for these locations, and provide basis for revision of relevant specifications. B. Hampel. HRIS 51. IRRD 702301. ACTIVE

(11) Effect of Tinted Wind Screens on a Drivers Vision in Darkness. HRIS 52. IRRD 702302. COMPLETE

New Projects

(12) Increasing the Risk in Injury Through the Mutual Effect of Vehicle Occupants. To determine how occupant protection can be improved in frontal and rearend collisions when there are several vehicle occupants to reduce failure of safety equipment due to multiple occupacy. Krueger, Hackenberg. HRIS 51. IRRD 702339. ACTIVE

(13) Possible Improvement of the Protective Action of Belts on the Rear Seats of Passenger Cars. To improve the restraint systems for the rear seats of cars to improve protection of rear seat passengers and to reduce possible overloading of front seat occupants. Krueger, Hackenberg. HRIS 51. IRRD 702340. ACTIVE

(14) Test Procedures for Cars Having Automatic Antilocking Devices Which Operate During Braking. Part 1. To study procedures for testing antilocking devices when braking on curved roads to be added to those regulations now proposed for straight ahead braking tests. D. Grunow, K. Rompe. HRIS 53. IRRD 702341. ACTIVE

(15) Control of Lightweight Motorcycles in Traffic. To devise a test method to be applied periodically to small, motorized two-wheelers in the interest of road safety and environmental protection. Heissing. HRIS 53. IRRD 702342. ACTIVE

d. Essen Location: Steubenring 53, Postfach 10 32 61, D-4300, Essen 1.

(2) Procedure for Testing Brakes on Trailers. To develop this procedure. H. Hoffmann, W. Rothmann. HRIS 53. IRRD 700253. COMPLETE

(4) Trial of a Procedure for Checking the Exhaust Emission of Motorcycles. A test of proposed procedures so as to establish a reduction in such emissions. Weber, Matako, Richter. HRIS 53. IRRD 701850. COMPLETE

(5) Effect of Exhaust Gas Back Pressure on Exhaust Gas Composition. An examination of three exhausts with different flow characteristics fitted to two vehicles, with measurements of fuel consumption and engine output. Weber, Matako, Afflerbach. HRIS 53. IRRD 701851. COMPLETE

(9) Braking Distance Formula and Pertinent Minimum Value for Full Braking. To derive the formula for full deceleration to be attained for agricultural and forestry vehicles. Hoffmann, Rothmann. HRIS 53. IRRD 702306. COMPLETE

(11) Procedure for Testing Exhaust Emissions from Mopeds. To carry out practical tests on the proposed procedure, and suggest improvements. Weber, Richter. HRIS 53. IRRD 702308. COMPLETE

New Project

(12) Hot Driving Conditions in the Brake Testing of Motorcycles. To develop a test for checking motorcycles of all weights for any deficiency in braking which occurs when the brake is hot. Hoffmann, Rothmann. HRIS 53. IRRD 702335. ACTIVE

175. e. Stuttgart Location: Postfach 30 11 40. D-7000, Stuttgart 30

New Project

(1) Technical Requirements of Base Cones for Vehicles and Trailers. To increase the effectiveness of base cones under all conditions of use. W. Guenter, R. Hoenig. HRIS 53. IRRD 702348. ACTIVE

176. INSTITUTE FOR ROAD SAFETY EDUCATION (Institut fuer Verkerrspaedgogik): Malteserstrasse 139-143, D-1000, Berlin.

a. College of Education of Berlin.

(2) Development and Testing of an Idea for Improving the Education of Driving Instructors. To design a model curriculum in which area of pedagogics is significantly intensified and improved, and find out the extent to which preparation is made for the more demanding tasks. A.E. Bongard, I. C. Bongard, H.J. Kueting, R. Witt, A. Behnke. HRIS 51. IRRD 702309. ACTIVE

179. DOKTOR-ING. G. KOENIG: Hermannstrasse 31, D-6000 Frankfurt am Main

(2) Testing and Improvement of the Stochastic Concept for Determining Dynamic Wind Loading. G. Koenig. HRIS 25. IRRD 701244. COMPLETE

180. KOEHLER-LEUTWEIN BUREAU OF TRAFFIC ENGINEERING (Ingenieubuero fuer Verkehrswesen Koehler-Leutwein): Mannheimerstrasse 46, D-7500 Karlsruhe.

(2) Influence of Cycle Tracks on Traffic Safety. Study of accidents to cyclists outside of built-up areas, with the view to establishing basic criteria for these tracks that will provide an increase in safety. Koehler, Leutwein. HRIS 51. IRRD 701349. COMPLETE

187. MAX PLANCK INSTITUTE FOR FERROUS METALLURGY: Max Planck Strasse 1, D-4000 Dusseldorf.

(2) Influence on Stress Cracking Corrosion Before Injection. To obtain a better understanding of delayed brittle cracking in loaded prestressed steels before injection, H.J. Engell, K. Bohnenkamp. HRIS 25. IRRD 701396. ACTIVE

190. DEVELOPMENT PLANNING CORPORATION (AGEPLAN): Zeppelinstr. 301, D-4330 Muelheim/Ruhr.

(1) Protection of the People Against Noise and Emission: Protection of Traffic Facilities. HRIS 17. IRRD 701227. (Citations) COMPLETE

191. UNIVERSITY OF DUSSELDORF, AN INSTITUTE FOR HEALTH: Gurlettstrasse 53, D-4000 Duesseldorf.

(1) Disturbance Effect of Motorway Noise on Frontagers. Buchta. HRIS 17. IRRD 701449. COMPLETE

(2) Study of Disturbance Caused by Traffic Noise in Relation to Class of Road, the Character of the Area and Existing Noise Loading. Study of noise levels and their effect on frontagers. HRIS 17. IRRD 701760. COMPLETE

(3) Subjective and Objective Effectiveness of Noise Protection Devices and Their Side Effects on Frontagers. A study of the effectiveness of noise protective devices and their side effects. H. W. Schlipkoeter. HRIS 17. IRRD 701989. COMPLETE

New Project

191. (4) Noise Map for Duisburg. A contourer noise map was produced for the City of Duisburg to illustrate the noise situation both by day and by night. E. Buchta, J. Kastka, H. W. Schlipkoeter. HRIS 17. IRRD 702085. COMPLETE

192. DORTMUND UNIVERSITY: August-Schmidt-Str., D-4600, Dortmund.

a. Department of Civil Engineering and Construction: Same address.

(1) Deformation of a Scaffold Support. J. Eibl. HRIS 25. IRRD 701241. (Citations) COMPLETE

(2) Safety Theory Related to Design of Girder Scaffolding. J. Eibl. HRIS 25. IRRD 700234. ACTIVE

(3) Determination of Imperfections in Compression Members in Scaffolding. Based on systematic measurements of large numbers of scaffolds, to establish the imperfections and improve design specifications. J. Eibl. HRIS 25. IRRD 701397. ACTIVE

(4) The Bearing Capacity of Skew Reinforced Concrete Slabs. To determine this capacity and the deformation behavior taking into account realistic materials laws when the concrete is cracked. J. Eibl. HRIS 25. IRRD 701398. ACTIVE

b. Institute for Regional Planning: Postfach 55, D-4600, Dortmund 50

(1) Fitting Elevated Public Transport Systems into Urban Design. K. Kunzmann. HRIS 16. IRRD 701617. ACTIVE

c. Chair of Concrete and Reinforced Concrete, Postfach 50 05 00, D-4600, Dortmund

New Project

(1) Rotation of Moments and Shear Bearing Capacity in Prestressed Concrete. To determine shear and moment bearing capacity in partially prestressed supporting cross sections, given variation of the amount of prestressing and stirrup reinforcement, observation of cracking and rotation, Eibl. HRIS 25. IRRD 702386. ACTIVE

d. Department of Transport, Postfach 50 05 00, D-4600 Dortmund 50.

(1) Spatial and Temporal Distribution of Weekend Leisure Traffic: Determination of Relevant Parameters. An analysis of weekend leisure traffic was necessary since the road network provided for normal week day traffic. Could not cope with returning traffic flows in the direction of built up areas, particularly on Sunday afternoons. P; Baron, P. Schwindt, E. Ruppert, W. Kinkeldei, G. Wuester. HRIS 55. IRRD 702086. COMPLETE

193. INSTITUTE OF CONSTRUCTION TECHNIQUES, BERLIN: Reichpietschufer 72-76, D-1000 Berlin

(1) Corrosion and Corrosion Protection of Injection Anchors. W. Stichel. HRIS 34. IRRD 701239. ACTIVE

194. STATE AGENCY FOR QUALITY CONTROL OF REINFORCED STEEL: Fritz-Reuter-Str. 26, D-8000 Muenchen.

(1) Determination of a Suitable Method of Testing the Brittle Fracture Sensitivity of Prestressing Steels. G. Rehm. HRIS 34. IRRD 701245. ACTIVE

194. (2) The Bending of Structural Steels in the Presence of Heat - Development of a Suitable Test Procedure and a Working Recommendation. G. Rehm. HRIS 34. IRRD 701831. ACTIVE

198. PROF. STEIERWALD, DR. HEUSCH AND DIPL.-ING. BOESEFELD: Peterstr. 2-4, D-5100 Aachen.

(2) Traffic Control at Motorway Junctions by Dynamic Operating Systems. Part 1. HRIS 54. IRRD 701448. ACTIVE

(3) Meaningfulness of Traffic Data Determined in a Procedure for Traffic Control. To analyze the relations between the structure of the data collection system and the objectives of the traffic control measures taken. HRIS 54. IRRD 701170. COMPLETE

200. CRONAUER-BURKEI-PUCHER CONSTRUCTION ENGINEERS: Hessestrasse 4, D-8000, Muenchen 40.

(3) Accident Rates Associated with Typical Movements at Road Junctions (Accident Probability). Examination of accident types, the severity associated with each type, and the rates for each type. HRIS 51. IRRD 701769. COMPLETE

203. GFS-MIDAS ASSOCIATION: Siegburger Str. 215, D-5000 Cologne 21.

(1) Systems Analysis of Road Weather and Warning Service. HRIS 54. IRRD 701456. ACTIVE

(2) Modernization of the Road Weather and Warning Service. Development of Software System Requirements. HRIS 40. IRRD 701651. ACTIVE

204. ESSO RESEARCH CENTRE, HAMBURG: Moorburger Str. 21, D-2100 Hamburg 90.

(2) Stability of Gussasphalt Surfacings Under Extremely Slow and Heavy Traffic. HRIS 24. IRRD 701522. COMPLETE

205. GERMAN WEATHER SERVICE: Frankfurter Str. 135, D-6050, Offenbach.

(1) Determination of Permanent and Contour Lines of Precipitation Intensity. HRIS 22. IRRD 701466. COMPLETE

206. BASF (BADISCHE ANILIN-UND SODA-FABRIK): D-6700 Ludwigshafen

(1) Comparability of the Results of Empirical Formulae and Approximation Methods for Calculating Frost Depth and Frosting Rates in Road Structures. HRIS 64. IRRD 701491. COMPLETE

207. DR. H. STEFFEN-CONSULTING ENGINEER: Gerhart-Hauptmann-Str. 11, D-4307 Kettwig.

(1) Evaluation of Literature on Soil Compaction. HRIS 62. IRRD 701492. ACTIVE

(2) The Use of Radiometric Methods of Measurement for Controlling the Compaction of Bituminous Materials. H. Steffen. HRIS 31. IRRD 701520. ACTIVE

208. HESSE CENTRE FOR SOIL RESEARCH: Lederberg 9-11, D-6200 Wiesbaden

(1) Pollution of Underground Water with Inorganic Toxic Materials Near Roads. HRIS 64. IRRD 701493. COMPLETE

(2) Stressing of Subterranean Water with Organic Materials in the Area of Road Runoff. A study of pollution of underground water with organic road materials. A. Golwer. HRIS 63. IRRD 702002. ACTIVE

209. FRIEDRICH KRUPP GMBH, INDUSTRIE-UND STAHLBAU: Postfach 1960, D-4140 Rheinhausen

(1) Testing and Selection of Thin Plastic Surfacings on Steel Carriageways. HRIS 34. IRRD 701505. ACTIVE

210. DR. GUENTHER ZENKE: Friedrichshulder Weg 64/b, D-2083 Halstenbek.

(1) Literature Study on Bitumen-Plastic Combinations in Roads. G. Zenke. HRIS 31. IRRD 701511. ACTIVE

(2) Improvement of Deformation Resistance by Means of Polymer-Modified Bitumens (Evaluation of Literature). A detailed evaluation of previously published literature with respect to mechanical rheological behavior of such bitumens in relation to consistency and temperature. G. Zenke, HRIS 31. IRRD 702014. ACTIVE

211. ISOTECH GMBH: Zunftstr, 11, D-7500, Karlsruhe.

(1) Behavior of Joint Sealing Materials for Concrete Surfacings in Relation to the Opening Widths of the Joints. HRIS 34. IRRD 701533. COMPLETE

212. PROF. DR. JUR, F. GRAGGER: Weinbergweg 50, D-6600, Saarbruecken.

(2) Group Analysis to Determine Errors in the Testing of Fill Density of Aggregates. To determine errors in the method for this test. HRIS 35. IRRD 701911. COMPLETE

(3) Principles and Models for Evaluating Group Tests and In Situ Tests on Roads. Part of the research into standardization of group tests. HRIS 33. IRRD 701937. COMPLETE

New Projects

(4) Continuation of a Study of the Use of Waste Products in Road Construction which involved the Evaluation of Tests and Experiences at Home and Abroad. Supersedes IRRD Research Project 701539. F. Gragger. HRIS 34. IRRD 702160. ACTIVE

(5) Group Analysis to Determine Testing Errors in the Crystallization Tests of Aggregates. Comparative studies are made in 11-Testing Centres to determine the errors in the crystallization testing of both chippings and coarse aggregate. F. Gragger. HRIS 35. IRRD 702160. ACTIVE

213. INSTITUTE OF CONSTRUCTION TECHNIQUES (Institut fuer Bautechnik): Reichpeitschufer 72-76, D-1000 Berlin.

(1) Establishing Rules for the Aerodynamic Coefficients of Lattice Structures. To make a collection of coefficients that take account of cross section forms found in practice that facilitate safe and economical designs. HRIS 25. IRRD 701286. (Citations) COMPLETE

214. DIPL;-ING. WALTHER PIECKERT: Fichtelbergstrasse 36, D-7000, Stuttgart.

(1) Establishing Rules for Aerodynamic Coefficients, Especially for Structures with Curved Surfaces. To establish rules, drawings and diagrams for determining wind forces and wind pressure distributions on these structures. W. Pieckert. HRIS 25. IRRD 701287. ACTIVE

215. INGENIEURBUERO DIPL.-ING., RUHRBERG & DR.-ING. SCHERMANN: Drosselstrasse 10, D-5800, Hagen.

(1) Standardization of Bridge Structures Carrying Roads over Federal German Main Roads having Central Reserves. To standardize both the design and construction of such bridges, generally two-span structures with 26 or 33 meter spans. HRIS 25. IRRD 701288. ACTIVE

216. COMPREHENSIVE UNIVERSITY OF WUPPERTALL: Gauss Strasse 20, D-5600 Wuppertal 1.

(1) Basic Computer Studies of the Bending Stress and Displacements in Vertical Single Piles and Pile Groups as a Result of Horizontal Forces Acting in the Region of the Surrounding Soil. Determine the influence of various combinations of bearing conditions at head and foot of piles, pile slenderness, deformation laws of the soil and geometry of the pile group and the horizontal displacements resulting from forces acting in the soil. H. Grasshoff. HRIS 25. IRRD 701289. ACTIVE

(2) Possibilities of Developing Pedestrian Shopping Areas with Special Reference to the Inclusion of Attractive Public Transport. To examine and analyze methods of developing traffic so that these can be considered in the planning of pedestrian shopping areas. J. Fiedler. HRIS 15. IRRD 701968. COMPLETE

New Project

(3) Development of a System of Evaluation to be Applied to Environmental Criteria in Road Planning. A self contained evaluation model is to be developed, based on the results of earlier research into criteria for environmental protection in road planning. M. Stolz. HRIS 23. IRRD 702120 ACTIVE

217. CHEMICAL WORKS HUELS, AG (Chemische Werke Huels AG): Postfach 1180, D-4379, Marl.

(1) Reaction Resin Mortar and Concrete. Determine material properties of joint sealants, mortar and concrete bound with unsaturated polyester resins, with reference to characteristics of the resin, the admixtures and the resin content. HRIS 32. IRRD 701290. ACTIVE

218. COLOGNE TECHNICAL COLLEGE (Fachhochschule Koeln): Deutz-Kalker Strasse 127, D-5000 Koeln.

(1) Construction Joints - Tests with Rib-type Expanded Metal as Permanent Formwork in Joints. Comparative studies of rib-type expanded metal as permanent formwork in joints, given different curing of the joints. S. Haerig. Materials Laboratory. HRIS 25. IRRD 701291. COMPLETE

220. IFAPLAN SOCIETY FOR APPLIED SOCIAL RESEARCH AND PLANNING (IFAPLAN - Gesellschaft fuer Angewandte Socialforschung MBM): Von-Grotte-Strasse 37, D-5000 Koeln.

(4) Human Error in Motorway Driving a Pilot Study. To develop a research concept of the problem and a methodology aimed at putting the concept into operation. D. Ellinghaus, M. Welbers. HRIS 52. IRRD 702310. COMPLETE

(5) Survey of Opinion on the Interior Design of WC Facilities with Reference to the Equipping of Federal Motorways with WC Facilities. To conduct a survey among motorway users to determine their opinion of toilet facilities. HRIS 23. IRRD 702065. COMPLETE

New Project

220. (6) Interaction of Driver and Vehicle. To describe the current state of knowledge on the relation between the driver and vehicle and to devise ways of filling in gaps in current research. D. Ellinghaus, M. Welbers, C. Bach. HRIS 52. IRRD 702352. ACTIVE

224. KIEL UNIVERSITY: Olshausenstrasse 40-60, D-2300 Kiel.

(1) Public Expenditure on Traffic Safety. The first step in the empirical realization of a systems analysis for road traffic safety and an assessment of the significance of measures to be incorporated in the classification. W. Knapp. Institute of Financial Science. HRIS 51. IRRD 701361. COMPLETE

b. Institute for Geology and Palaeontology: Same address.

New Project

(1) Mining and Slag Materials Used in Roads. A study was made of fill materials from mines and frost blankets based on blast furnace slag to determine their effects on ground water if dangerous constituents are washed out. G. Matthess, R. Oetting, M. Schulz, H. Werner, H. Pietzner, K.H. Suchan. HRIS 35. IRRD 702088. COMPLETE

225. INSTITUTE FOR EMPIRICAL SOCIOLOGY: (Institut fuer Emoirische Soziologie): Kossmannstrasse 1, D-6600 Saarbruecken.

(1) The Media in Relation to Juvenile Motorists. To establish the cause of the poor efficiency of the media and determine which media are most effective in evoking a response from juvenile motorists. O. Neuloh, L. Leisewitz. HRIS 52. IRRD 701362. COMPLETE

228. STATE MATERIALS TESTING INSTITUTE OF NORTHRHINE-WESTFALIA (Staatliches Materialpruefungsamt Nordrhein-Westfalen): Marsbruchstrasse 72, Postfach 410307 D-4600, Dortmund.

(1) Development of Environmentally Favorable Anti-Corrosion Treatments - Flame Cleaning. An investigation of flame cleaning methods for preparation prior to application of anti-corrosion coatings. Gross. HRIS 34. IRRD 701371. ACTIVE

(2) Effect of the Formation of an Element Between Steel in Concrete and Steel in Soil, and Possible Protective Methods. Study of the corrosive behavior of steel in soil given an electrical bond with concrete-covered steel parts. HRIS 34. IRRD 701387. COMPLETE

(3) Salt Deposits on Corrosion Protection Coatings of Road Bridges. Comprehensive studies of the origin of deposits of crystalline salts observed on these protective coatings. Gross. HRIS 34. IRRD 701832. ACTIVE

229. INGENIEURBUERO KIRCHNER und WOLF: Bahnofsallee 35, D-3200 Hildesheim.

(1) Photogrammetric Measurement of Deformation in Retaining Walls and Engineering Structures. HRIS 25. IRRD 701624. ACTIVE

230. RESEARCH ASSOCIATION FOR CONSTRUCTION AND HOUSING (Forschungs Gemeinschaft Bauen und Wohnen): Hohensollernstrasse 25, D-7000 Stuttgart 1

(1) Traffic Facilities from the Viewpoint of the Pedestrian - Suitability and Acceptibility of Devices for Pedestrians at Areas of Conflict with Vehicular Traffic. HRIS 54. IRRD 701625. COMPLETE

GERMANY (contd)

231. INGENIEURBUERO DR.-ING. JUERGEN H. KLOECKNER: Melanchthonstrasse 2, D-7500 Karlsruhe.

(1) Limits of Application of Footpaths on Two-Laned Roads. HRIS 21. IRRD 701633. ACTIVE

(5) Evaluation of Accidents Involving Buses on Motorways. An analysis of individual bus accidents to determine relation between speed and accident type and consequences. J. H. Kloeckner. HRIS 51. IRRD 701853. ACTIVE

(7) Accident Characteristics of Standard Cross Sections. To provide detailed information on the safety of standard cross sections. J. Kloeckner. HRIS 21. IRRD 701980. COMPLETE

(8) Limits of Use of Cycle Tracks on Two-laned Roads Outside Urban Areas. A study of the use of these tracks as related to safety of the cyclists. J. H. Kloeckner. HRIS 21. IRRD 702056. ACTIVE

232. DIPL.-ING. R. SCHUMANN: Kiefernweg 11, D-5032, Efferen.

(1) Analysis and Improvement of Cooperation Road Construction and Regional Planning. R. Schumann. HRIS 11. IRRD 701634. ACTIVE

233. WIBERA ECONOMICAL CONSULTING COMPANY (WIBERA Wirtschaftsberatung AG), Achenbachstrasse 43, D-4000, Dusseldorf

New Project

(2) Processes Involved in Joint Traffic Safety Work. To classify and evaluate the way decisions are made on safety measures at the political levels of community, county and state. G. Beyerle, H. Dietz, H. Wohlmann. HRIS 51. IRRD 702361. ACTIVE

234. MUELLER-BBM GMBH: Robert-Kocv-Strasse 11, D-8033, Planegg.

(1) Traffic Noise Forecasts on Urban Roads. Schreiber. HRIS 17. IRRD 701642. COMPLETE

235. ENGINEERING BUREAU FOR TRAFFIC SCIENCE (IVT-Ingenieurbuero fuer Verkehrstechnik) Yorckstrasse 22, D-7500, Karlsruhe.

(1) Ways of Developing a Self-contained, on-line Optimization Method for Controlling Streams of Traffic. HRIS 54. IRRD 701650. ACTIVE

(2) Collection of Components Relating to the Organization of First Aid Centers. To provide a base for the development of a detailed analysis of first aid organizations. B. Rueffer. HRIS 51. IRRD 700255. COMPLETE

(3) Forecast of Traffic Volumes by Rewriting Long-Term Expectations. To examine medium term and short term forecasting and correlating these with long term forecast values. HRIS 13. IRRD 701765. COMPLETE

(4) Principles for the Use of Symbols and Pictograms in Road Traffic, Related to Moving and Parked Vehicles. A study of the principles and limits to be considered for the practical application of symbols and pictograms. HRIS 54. IRRD 701774. COMPLETE

(5) Simulation of Traffic Flow to Determine the Effects of Raising the Maximum Speed for Buses on Motorways from 80 to 100 km/Hour. Simulation of traffic flow to show how speed distributions for buses and other vehicles are changed by raising the maximum speed limit for buses. W. Schmitt, B. Rueffer, W. Siegener. HRIS 55. IRRD 701854. ACTIVE

235. (6) Structural and Traffic Aspects of the Motorway Network and Processing of the Results of Simulation to Determine the Effects of Raising the Maximum Speed for Buses from 80 to 100 km/Hour on Motorways. R. Rueffer. HRIS 55. IRRD 701855. ACTIVE

New Project

(7) Decision Strategies for Emergency Rescue. To determine how a simulation model could be used to optimize the provision of rescue services and the strategies for their use. R. Schmiedel, W. Siegener, T. Puhan. HRIS 51. IRRD 702358. ACTIVE

236. PROF. DR.-ING. G. STEIERWALD-DR.TECHN. J. SCHOENHARTING: Alexanderstrasse 105, D-7000 Stuttgart.

(1) Short-Term Forecast of Traffic Flows Based on Cross-sectional Measurements. G. Steierwald, J. Schoenharting. HRIS 55. IRRD 701653. COMPLETE

(2) Self-sufficient Situation-Dependent Speed Control on Motorways - Part 1A. To develop control strategies in accordance with traffic engineering and social requirements to reduce energy requirements, improve comfort and reduce costs. HRIS 54. IRRD 701772. COMPLETE

(3) Criteria for the Use and Design of Pedestrian Facilities. Development of design criteria for zebra crossings and pedestrian traffic signals as a basis for the revision of specifications. H.H. Rose, J. Schoenharting. HRIS 54. IRRD 701876. ACTIVE

New Project

(4) Effect of the Duration Curve of Traffic Volume on the Planning of Traffic Guidance Measures. A procedure is to be developed which allows duration curves of traffic conditions to be calculated which include those features which are significant for traffic guidance. G. Steierwald, J. Schoenharting. HRIS 55. IRRD 702121. ACTIVE

237. STRABAG BAU AG, ZENTRALLABORATORIUM: Siegburger Strasse 120, D-5000, Koeln 21.

(1) Preparation and Statistical Evaluation of Group Analyses as Part of the Revision of DIN 1995. HRIS 34. IRRD 701684. COMPLETE

(2) Preparation and Statistical Evaluation of Group Analyses as Part of the Revision of DIN 1995. Part 2. HRIS 34. IRRD 701691. COMPLETE

(3) Conduction of a Group Analysis to Determine Comparative and Repeated Areas of Scatter (DIN 1995). To undertake a group analysis to determine the benefit of new and improved equipment and testing techniques. K. Ditter. HRIS 33. IRRD 702016. ACTIVE

a. Strabag Bau AG: Helfenriederstrasse 3. D-8000 Muenchen 70.

(1) Production of Samples for the Suitability Testing of Bituminous Mixture (DIN 1996). To determine if bulk density in suitability testing can be improved by mechanical mixing technology. HRIS 31. IRRD 702017. ACTIVE

238. DIPL.-ING. K. STRICKER, BUERGERMASTERAMT SAECKINGEN: Postfach 73, D-7880 Saeckingen.

(1) Execution and Evaluation of the Survey of Drainage Used in Practice. HRIS 22. IRRD 701662. ACTIVE

238. (2) Possibilities of Restricting the Amount of Different Equipment Available for Drainage. To evaluate questionnaires regarding user preferences for the many types of such equipment available. HRIS 22. IRRD 701796. ACTIVE

239. PROF. DR. GUENTER BUESCHGES: Wangeroogeweg 34, D-4800, Bielefeld.

(1) Typology of Traffic Safety Measures. To work out a differentiated method of analysis which is suitable for the complex subject of traffic safety with a view to controlling types of safety measures. HRIS 51. IRRD 700256. COMPLETE

240. DR. WOLFGANG HAHN, PSYCHOLOGICAL MARKETING AND COMMUNICATIONS RESEARCH: Holbeinstrasse 8, D-2800 Bremen.

(1) Study of Drinking Patterns. To develop a questionnaire and a framework for observation in order to obtain data on behavior and attitudes of individuals as to drinking and driving. W. Hahn, E. Kuller, M. Bahlmann. HRIS 52. IRRD 700257. COMPLETE

241. PHILIPP HOLZMANN AG: Grafenberger Allee 82, Postfach 4329, D-4400.

(1) Measurement Study to Produce a Tunnel. A large scale practical test of a horizontal drilling method. HRIS 63. IRRD 701399. COMPLETE

(2) Development and Testing of a New Type of Thix Shield Prototype for Tunnel Driving. To develop and test this new shield for tunnel driving. HRIS 41. IRRD 701800. COMPLETE

242. IFT-THERAPY RESEARCH COMPANY (IFT-Therapieforschung GNBH): Parzivalstrasse 25, D-8000, Muenchen.

(1) Preliminary Study to Test Procedures for Modifying the Behavior of Drivers who Drink Alcohol. To test these methods. S. Kraemer, I. Kuhnert, G. Krauthan. HRIS 52. IRRD 700258. COMPLETE

243. DIPL.-ING. WALTER ROPERS: Bertha-von Suttnerstrasse, 6, D-2800, Bremen.

(1) Development of Design Tables for Continuous Two-webbed Plate Beam Bridges without Transverse Beams. To examine the extent to which stiffness constants and support widths have to be varied to describe this design which provides a continuous system without girders. HRIS 25. IRRD 701801 COMPLETE

244. STUDY SOCIETY FOR PRECAST CONSTRUCTION: (Studiengemernschaft fuer Fertigbau e. V.): Panoramaweg 11, D-6200, Wiesbaden.

(1) Bonding Techniques and Joints in Civil Engineering. To determine the state of the art in bonding as it applies to the joining of structural parts into engineering structures. HRIS 25. IRRD 701802. ACTIVE

245. TRAUMANN & ZANGEMEISTER: CONSULTANTS: Oberlaender Ufer 192, D-5000, Koeln.

(1) Development of an Instrument for Objectively Evaluating Layout for Traffic Turning Left. To develop an instrument to facilitate the evaluation of measures taken to design for left turning traffic at accident black spots. HRIS 54. IRRD 700259. COMPLETE

246. CENTER FOR SURVEYS, METHODS AND RESEARCH (Zentrum fuer Umfragenm Methoden und Analysen): B2 1, D-6800, Mannheim.

(1) Studies on Alcohol and Driving - Analysis of the Media. To establish the mass media which should be considered for publishing information and advertisements on the problem. K. Schoenbach, A. Kutteroff, H. D. Klingemann. HRIS 52. IRRD 700260. COMPLETE

246. (2) Methodology of and Developments in the Research Complex "Alcohol and Driving." Surveys of the problem of alcohol and driving, including development of instruments, evaluation of tests and supervision of surveys. Hoffmeyer-Zlotnik. HRIS 52. IRRD 700261. ACTIVE

(3) Alcohol and Driving, Analysis of the Media. A study of the illustration of alcohol consumption in the media, including newspapers, magazines, journals, some television advertising and discussion programs. A. Kutteroff, J. Gross. HRIS 52. IRRD 702311. ACTIVE

247. BROEG SOCIAL RESEARCH (Sozialforschung Broeg): Hans-Graessel-Weg 1, D-8000, Muenchen.

(1) Studies of Alcohol and Driving - Study of Drinking Patterns. To develop ways of restricting excessive alcohol intake in association with driving. M. Voltenauer. HRIS 52. IRRD 700262. ACTIVE

(2) Type and Frequency of Motorized and Non-motorized Participation in Traffic. Study of the participation in traffic with respect to mode of transport used, distance travelled, and evaluation by reference to social demographic categories, availability of transport, journey purpose, time of participation etc. W. Schwerdtfeger, B. Kueffner, M.M. Kohn. HRIS 55. HRIS 702333. COMPLETE

New Projects

(3) Development of an Individual Behavior Model for Clarifying and Forecasting Weekday Activity Patterns in Urban Areas - Development of a Concept of Research and Methods. To work out a new set of principles for clarifying and predicting traffic behavior. O. G. Foerg, W. Schwerdtfeger, W. Broeg. HRIS 13. IRRD 702096. ACTIVE

(4) Development of an Individual Behavior Model for Clarifying and Forecasting Weekday Activity Patterns in Urban Areas - Mobility Forecast Stage 2. A comprehensive model for clarifying and forecasting traffic behavior is to be developed. H. Hautzinger, P. Kessel. HRIS 13. IRRD 702097. ACTIVE

(5) The Potential of the Bicycle as a Transport Mode in Traffic Outside Built up Areas. Examples from home and abroad show that efforts to increase bicycle use promise to be successful. W. Broeg. HRIS 13. IRRD 702118. ACTIVE

248. PRIVATDOZENT DR. ECKART BOMSDORF: Zum Hedelsberg 46, D-5000, Koeln.

(1) Alcohol and Driving - Secondary Analysis of Accident Statistics. Study of accidents with reference to alcohol as a cause. HRIS 52. IRRD 700263. COMPLETE

249. DEUTAG MISCHWERKE GMBH: Justinianstrasse 16. D-5000 Koeln 21.

(1) Group Test to Check the Dewatering Procedure and Determine the Area of Scatter in the Determination of Bulk Density. A study of the differences in results of this test as conducted by a number of laboratories. F. Rode. HRIS 61. IRRD 701923. ACTIVE

250. DR. GUTHEIL, CONSULTANTS ON ROCK IN ROAD ENGINEERING: Am Hummelsberg 10, D-5960, Olpe-Rhode.

(1) The Dependence of Flat Seismic Measured Values on the Position of the Partition Surface in Rocks near the Surface. To develop a practical method of combined rock description by means of a series of combined flat seismic and tectonic measurements at several points. HRIS 63. IRRD 701901. ACTIVE

251. SOCIETY FOR THE QUALITY SURVEILLANCE OF CONSTRUCTION MATERIALS: Geleitstrasse 105, D-6050. Offenbach.

(1) Group Analysis to Determine Errors in the Testing of the Water Absorption and Saturation of Aggregates. To determine standard deviation between multiple analyses, standard deviations under repetitive conditions, and standard deviations under comparative conditions. HRIS 35. IRRD 701912. COMPLETE

252. UNIVERSITY OF THE ARMED FORCES IN THE GERMAN FEDERAL REPUBLIC.

a. Construction Engineering and Surveying Department: Schwere-Reiter-Strasse 35, D-8000, Muenchen 40.

(1) Influencing Factors, Calculations and Sensitivity Tests for Road Construction Contractor Costs within the Framework of a Cost Benefit Analysis for Road Pavements. To determine the effects of such factors as taxes, inflation rate, building costs, function and maintenance costs, time and quantity of repairs on costs to be borne by the contractor so that changes in wages and prices can be included. HRIS 15. IRRD 701938. COMPLETE

(2) Extension of Calculation Equations and Sensitivity Tests and Development of Behavioral and Management Models as a Basis for Cost Calculations for Road Pavements. Based in previously completed study, the cost calculation equation is being extended to take account of further detailed influencing factors in maintenance, repair and renewal methods. A. Schmuck. HRIS 15. IRRD 702030. COMPLETE

New Projects

(3) Development and Use of a Set of Economic Calculations for Road Pavements and Possibilities of Determining and Quantifying Basic Influencing Factors. Factors affecting the development of a set of cost calculations for road pavements are to be worked out taking into account road user costs as well as road construction contract costs. A. Schmuck. HRIS 15. IRRD 702089. ACTIVE

(4) Heat-Induced Modifications of the Lengths of Polymer-Modified Asphalts. To improve the procedure for testing heat-induced length modifications developed at the roads laboratory in Munich. A. Schmuck. HRIS 31. IRRD 702161. ACTIVE

253. INSTITUT FUER WOHNEN UND UMWELT GMBH: Anastrasse 15, D-5300, Darmstadt.

(1) Traffic Planning Measures in Development Areas. - Preliminary Study (Institute for Living and the Environment). To develop principles for planning practical improvements and making recommendations for implementation of various measures in individual cases. HRIS 17. IRRD 701747. COMPLETE

(2) Infringement of Claims for use Through Traffic Planning Measures. To establish priorities for use based on comparisons of the relevant claims of conflicting usages in traffic planning measures. A. W. Gleue, P. Muellar. HRIS 12. IRRD 701972. ACTIVE

254. DIPL.-ING. A. KOSSAK: Kuefuerstendamm 62, D-1000, Berlin 15.

(1) Working out of Principles for Increased Consideration of Design Criteria in the Planning of Streets. To reduce difficulties in understanding between planners, provide examples of basic planning guidelines. HRIS 21. IRRD 701750. COMPLETE

255. PROF. DR. E. SCHMIDT-ASSMANN: Koenigsallee 63, D-4630, Bochum.

(1) Legal Basis for Working on and Control of Noise on Existing Roads. To indicate the legal basis for the evaluation and control of noise on existing roads. HRIS 70. IRRD 701764. (Citations) COMPLETE

257. MESSERSCHMITT-BOELKOW-BLOHM GMBH: Robert-Kock-Strasse, D-8012, Ottobrunn.

(1) Development of a Controllable Hot Gas Drilling Machine for the Construction of Mining Tunnels Having Small Diameters. To determine if this system is a technically feasible and economic method of underground building. HRIS 41. IRRD 701834. ACTIVE

(3) Design of a Suite of Programs for Road Design. To work out a proposed "Integrated Design and Information System for Road Design." HRIS 21. IRRD 702039. ACTIVE

258. MARPLAN RESEARCH SOCIETY FOR MARKET AND CONSUMPTION (Marplan Forschungsgesellschaft fuer Markt und Verbrauch MBH): Schlosstrasse 4, D-6050, Offenbach.

(1) Research Program on Bus Speeds: Representative Survey of Residents. To study general effects of raising speeds from 80 to 100 km/hr. on the population and on other traffic and behavior of road users. R. Wohlmann, F. Moses. HRIS 55. IRRD 701856. ACTIVE

(2) Alcohol and Driving. Survey of some 3000 people to determine their alcohol consumption habits and traffic behavior. R. Wohlmann, F. Moses. HRIS 52. IRRD 702312. ACTIVE

259. WORKING GROUP FOR REGIONAL PLANNING (Arbeitsgruppe fuer Regionalplanung): Kurfuerstendamm 214, D-1000, Berlin

(1) Ways of Improving the Safety of Pedestrians and Children in Developed Urban Areas. To analyze the effect of measures taken to modify the road network on the behavior of pedestrians, children and drivers. R. Albrecht. HRIS 51. IRRD 701857. ACTIVE

260. UNIVERSITY FOR ECONOMY AND POLICY

a. Research Institute (Hochschule fuer Wirtschaft und Politik, Forschungsstelle): Von-Melle-Park 9 Post Fach 182256, D-2000 Hamburg.

(1) The Consequences and Costs of Child Accidents in Hamburg in 1977. To obtain this information for the first time. HRIS 51. IRRD 701858. ACTIVE

262. INTERNATIONAL INSTITUTE FOR TECHNOLOGICAL EDUCATION (Institut International Pour l'Education Technilogique): Posselstrasse 2A, D-6900, Heidelberg.

(1) Determination and Evaluation of Methods of Education with Respect to Road Traffic. To describe and analyze teaching strategies relating to the subject of road traffic in schools. C.J. Born, E. F. Rother, S. Spanik, F. Landfeldt, U. van Look. HRIS 51. IRRD 701859. ACTIVE

263. UNIVERSITY OF ESSEN

a. Chair for Traffic Education (Essen Universitaet, Lehrstuhl fuer Verkehrserziehung): Universitaetstrasse 11, Post Fach 6843, D-4300, Essen.

(1) Youth Traffic Schools for Disabled Children, Setting up of a Youth Traffic School in Oberhausen for Mentally and Physically Handicapped Children. An analysis of existing teaching program to determine if they can be adapted to cope with the handicapped children. M. Geiler. HRIS 51. IRRD 701860. ACTIVE

263. (3) Study of Young Moped Riders. Analysis of young riders of two wheeled vehicles to establish principles for systematic traffic education in theory and practice. H. Koch. HRIS 51. IRRD 702314. ACTIVE

265. INSTITUTE FOR CONCRETE STEEL AND REINFORCED CONCRETE (Institut fuer Betonstahl und Stahlbetin e. V): Landsberger Strasse 414, D-8000, Muenchen

(1) Development of a Generally Valid Method of Calculating Crack Widths from Applied Stress, Based on Theoretical Knowledge and the Results of Tests. A study of the restrictions imposed on construction practices by the type of checking but not by safety requirements, regarding cracking. HRIS 25. IRRD 701836. ACTIVE

266. BUREAU FOR RURAL DEVELOPMENT (Gesellschaft fuer Landeskultur GMBH): Friedrich-Missler-Strasse 42, D-2800, Bremen.

(1) Collection and Evaluation of Foreign Measures for Increasing Road Safety in Town Centers. Examination of such foreign measures and evaluation for possible adoption in Germany. G. Ruwenstroth, K. Fleischhauer, E. Kuller. HRIS 51. IRRD 701878. COMPLETE

267. INGENIEUBUERO M. EICHENAUER/ H.H. VON WINNING/E. STREICHERT: Sperlstrasse 38, D-8000 Muenchen.

(1) Safety and Behavior of Road Users on Roads with Restricted Traffic. Pilot Study in Unterhacing. To establish changes which arise through the conversion of conventional road space into pedestrian streets which can be used by vehicles. M. Eichenauer, H. H. von Winning, E. Streichert. HRIS 55. IRRD 701817. ACTIVE

268. INSTITUTE FOR INFORMATION PROCESSING IN ENGINEERING AND BIOLOGY OF THE FRAUNHOFER-GESELLSCHAFT (Institut fuer Informationsverarbeitung in Technik und Biologie der Fraunhofer-Gesellschaft): Sebastian-Kneipp-Strasse 12-14, D-7500 Karlsruhe.

(1) Man as a Vehicle Driver: Information Perception and Processing. To identify the amount of information a driver must perceive and process, and to establish the limits of that ability. M. Voss, W. Haettich, W. Hanschmann. HRIS 52. IRRD 702315. (Citations) COMPLETE

(2) Development of Means for Comparatively Evaluating Stress on Vehicle Drivers Caused by Oral and Visual Information Transfer. To evaluate the stress on drivers caused by information loading and to reduce this loading by suitable optical or acoustical information transfer. D. Bouis, R. Haller, M. Voss. HRIS 52. IRRD 702316. COMPLETE

269. MEDICAL UNIVERSITY OF HANNOVER;

a. Emergency Surgery (Medizinische Hochschule, Unfallchirugische Klinik): Karl-Wiechert-Allee 9, D-3000 Hannover.

(1) Black Spot Analysis of Cyclist, Child and Bus Accidents. To obtain complete verbal and photographic documentation of skid marks, vehicle deformation and injuries and question those involved as soon as possible after the accident. D. Otte, E. G. Suren. HRIS 51. IRRD 702317. (Citations) ACTIVE

270. PROF.-DR. HELLMUT LAMSZUS: Am Tannenberg 10, D-2105, Seevetal

(1) Development and Testing of an Idea for Improving Driving Instructor Education. To develop a curriculum for this purpose. H. Lamszus. HRIS 51. IRRD 702318. ACTIVE

271. ENGINEERING BUREAU DR. BENDER AND STAHL: Bunzstrasse 3, D-7140, Ludwigsburg.

(1) Comparative Study of At-grade and Grade-separated Junctions on Two-lane Roads. Clarification of the differences in accident occurence and traffic flow at these junctions. Braunstein, Woehner, Moll. HRIS 51. IRRD 702319. ACTIVE

272. INFRATEST INFORMATION SERVICES (INFRATEST Wirtschaftsforschung GMBH): Landsberger Strasse 338, D-8000 Muenchen.

(1) Bus Speeds - Interviews with Bus Firms. To obtain statistical information on operations and economics for test and non-test buses, compare drivers, opinions on raising bus speed limits, and determine maximum speeds. R. Weissbarth, H. C. Wagner. HRIS 55. IRRD 702320. COMPLETE

273. UNIVERSITY OF HAGEN.

a. Department of Theory of School and Education (Fernuniversitaet Hagen, Arbeitsbereich Theories der Schule und des Unterrichts): Koernerstrasse 34, Postfach 940, D-5800, Hagen.

(1) Further Education of Traffic Instructors by Remote Study. Part 1 - Education of Lecturers on Introduction to Motorized Traffic (EMS). To clarify whether it is possible to develop different types of instruction based on remote study to provide effective support for further education methods in the 14 to 18 year old group. M. Wirthmann. HRIS 51. IRRD 702321. COMPLETE

274. SAMPLE INSTITUTE (Sample-Institut GMBH): Suelzguertel 38, Postfach 42 03 07, D-5000 Koeln.

(1) Traffic Education as a School Task from the Point of View of Teachers. To examine the current position of traffic education in schools and determine the experiences and opinions of teachers concerned with traffic education. L. Hohmann. HRIS 51. IRRD 702322. ACTIVE

(2) Effectiveness of Television Broadcasts in Increasing Safety. To achieve defined learning objectives on road safety by means of television. L. Hohmann. HRIS 51. IRRD 702323. COMPLETE

275. PRIVAT - DOZENT DR. -ING. G. HARDER, BERATENDER INGENIEUR FUER STAEDTEBAU: Heisterkamp 18, D-3005, Hemmingen.

(1) Determination of Journey Times of Motor Vehicle Traffic on Roads in Urban Areas for Comparative Economic Calculations and for the Design of Streets Taking into Account the Effects on the Quality of Residential Surroundings. Part B: Determination of Journey Time on Urban Roads Stage 1. G. Harder. HRIS 55. IRRD 702033. ACTIVE

(2) Practical Trial of Theoretical Procedures for Measuring the Social Costs and Benefits of Structural Measures relating to Traffic, with Special Reference to the Benefit Components "Valuable Construction Substance", "Valuable Green Areas", and "Accessibility". Stage 1. G. Harder. HRIS 15. IRRD 702036. ACTIVE

New Project

(3) Ways of Including the Costs of Accidents in Urban Areas in Future Recommendations for the Layout of Roads - Economic Efficiency (RAS-W), With Particular Reference to Quantities. To determine the relationship between accidents and certain types of street in urban areas to form the basis of the inclusion of the inclusion of accidents in studies of economic efficiency. G. Harder. HRIS 51. IRRD 702391. ACTIVE

277. STUDY ASSOCIATION FOR LOCAL TRAFFIC (Studiengesellschaft Nahverkehr MBH) Lokstedterweg 24 D, 2000, Hamburg 20.

New Projects

(2) Total Numbers of Disabled Persons using Public Transport in Berlin (West). The total number of disabled living in the Federal Republic of Germany, including West Berlin, is not known. E. Pajonk. HRIS 16. IRRD 702091. ACTIVE

(3) Social Situation and Mobility of Disabled of Disabled Persons in Berlin (West). The project is concerned with the building up of a transport service for the disabled. E. Pajonk. HRIS 16. IRRD 702092. ACTIVE

(4) Working out of Technical Standards for Automatic Operations in a Local Public Transport System. The work is a contribution to the revision of the draft recommendations to help finalize the new standard. H. Daeuper, D. Naumann, V. Rothermel. HRIS 12. IRRD 702093. ACTIVE

(5) Investigations into a Special Family Tariff in a Rurally Structured Area. To experiment with special favorable public transport tariffs in a rurally structured area, and to determine the effectiveness of the selected tariff on the attractiveness and use of public transport. D. Bohlig, M. Meetz. HRIS 15. IRRD 702094. ACTIVE

280. GUMMERSBACH HOSPITAL. (Krankenhaus Gummersbach): Brueckenstr. 54, D-5270, Gummersbach.

New Project

(1) Belt Injuries. An analysis of the effect of the safety belt on 52 belted car occupants examined for injuries after accident, and an investigation of the vehicles involved. W. Herzog, A. Knitter. HRIS 51. IRRD 702371. COMPLETE

281. INSTITUTE FOR DISASTER AND ACCIDENT RESEARCH. (Sozialwissenchaftliches Institut Fuer Katastrophen und Unfallforschung): Holtenauer Str. 82, D-2300, Kiel.

New Project

(1) Evaluation of Behaviour at the Scene of the Accident. To determine the course of events during the first few minutes after an accident, particularly public readiness to assist and the quality of assistance. S. Metreveli. HRIS 52. IRRD 702370. (Citations) COMPLETE

282. GITEC CONSULT ENGINEERS (Gitec Consult GMBH): Augustastr. 30, D-4000, Duesseldorf 30.

New Project

(1) Measures for Making Town Centre Cyclist Traffic Safe. To work out proposals based on planning, structure design, traffic control and traffic surveillance for reducing risks to cyclist in order to encourage cyclist traffic. U. Henning, E. Neubauer, E. Urban. HRIS 12. IRRD 702372. ACTIVE

283. GERMAN STEEL WORKS COMMITTEE (Deutscher Ausschuss Fuer Stahlbau): Ebertplatz 1, D-5000, Koeln 1.

New Project

(1) Effect of Shear Stress on the Permissible Voids in Fillet Welds in Prefabricated Coatings. To include shear stress values with those included in tests carried out on fillet welds on prefabricated coatings subjected to longitudinal and transverse stress. HRIS 25. IRRD 702374. ACTIVE

284. STADTOBERBAUDIREKTOR I. R. DIPL.-ING. W. BORELLY: Schwanenstr. 2 C., D-6800, Mannheim.

New Project

(1) Documentation of Cable Bridges - Suspension and Cable Stayed Bridges - Both at Home and Abroad, with Particular Reference to the Tension Members Used. To document methods used to construct all the significant suspension and cable stayed bridges and suggest special scientific handling of certain of the problems highlighted. W. Borelly. HRIS 25. IRRD 702373. ACTIVE

285. INSTITUTE FOR SOCIAL MEDICINE, PREVENTION AND REHABILITATION (Institut Fuer Sozialmedizin, Praevention und Rehabilitation E.V.): Hoehenbergstr. 12, D-8132, Tutzing.

New Project

(1) Collection and Evaluation of Data on the Occupational Stress, Health and Sickness of Professional Drivers. To determine by medical psychological and sociological surveys those traffic related stresses,psychosomatic risk factors and situational disturbances associated with professional drivers. HRIS 52. IRRD 702344. ACTIVE

286. LABORATORY OF PHYSIOLOGY AND BIOMECHANICS OF ASSOCIATION PEUGEOT-RENAULT (Laboratorium Fuer Physiologie und Biomechanik Der Firma Peugeot-Renault): 18, Rue Des Fauvelles, F-92250, La Garenne-Colombes, France.

New Projects

(1) Study of Lateral Collisions as Part of Research on Biomechanics. Reconstruction of a Further Sideways Collision. An extension of a series of sideways collision tests reported in an earlier project. The same methodology is being used. C. Tarriere. HRIS 51. IRRD 702357. ACTIVE

(2) Reconstruction of Pedestrian Accidents. To reconstruct actual pedestrian/car collisions to find possible relations between the occurrence and severity of pedestrian head injuries to possibly serve as a basis for head protection criteria. C. Tarriere. HRIS 51. IRRD 702356. ACTIVE

(3) Interpretation of Brain Tolerances Based on Data Obtained from Brain Injuries to Cadavers. To describe brain injuries in accordance with neurological indicators resulting from the head trauma, with results obtained from living people enabling the severity of brain injuries sustained by dead people to be evaluated and brain tolerances determined. E. Tarriere. HRIS 52. IRRD 702353. ACTIVE

288. ICON-INSTITUTE, SOCIETY FOR APPLIED SOCIO-RESEARCH, CONSULTATION, PLANNING AND DEVELOPMENT (Icon Institut, Gesellschaft Fuer Angewandte Sozialforschung, Beratung, Planung Und Entwicklung): Von-Groote-Str. 28, D-5000, Koeln 51.

New Project

(1) Assessment of the Children's Traffic Club. To assess the effectiveness of the learning games through internal evaluation and make recommendations for improving the Club. D. Briefs, A. Lennertz. HRIS 51 IRRD 702363. COMPLETE

289. G. EDELMANN: Brentanostr. 38, D-3300, Braunschweig.

New Project

(1) EMS Course - Introduction to Motorized Traffic - Traffic Education Concept for the Second Grade. To develop a course curriculum for the traffic education of 14-18 year olds. G. Edelmann. HRIS 51. IRRD 702336. (Citations) COMPLETE

290. VOLKSWAGENWERK AG, Heinrich-Nordhoff-Strasse, D-3180, Wolfsburg.

New Project

(1) Development of an Anthropometric Dummy for Testing Occupant Protection in Sideways Collisions. To conduct impact sled tests on a hybrid dummy to assess usefulness of spare parts. R. Weissner, F. Rogowski, Leyer. HRIS 52. IRRD 702362. (Citations) COMPLETE

291. INTERNATIONAL INSTITUTE FOR EMPIRICAL SOCIAL ECONOMIES (Internationales Institut Fuer Empirische Sozialoekonomie) (INIFES): Haldenweg 23, D-8901, Leitershofen

New Project

(1) Methods and Criteria for Checking the Effectiveness of Traffic Education Campaigns. To develop theoretical and behavioral criteria for examining the effectiveness of education campaigns aimed at road users, together with instructions for their practical application. M. Pfaff, E. Kistler, H. Schulze. HRIS 51. IRRD 702351. ACTIVE

292. HAGEN COUNSELLING (Hagen-Beratungsbuero Fuer Wirtschaft Und Verwaltung), Leyboldstr. 1, D-5000, Koeln 50.

New Project

(1) Children's Use of the Media, and What the Media Have to Offer. To produce a handbook for assessing the chances of contact and effects of formal and informal traffic information in the mass media. HRIS 51. IRRD 702347. ACTIVE

293. FREUDENSTADT HOSPITAL (Kreiskrankenhaus Freudenstadt): Karl-Von-Hahn-Strasse, D-7290, Freudenstadt.

New Project

(1) Effect of the Rescur Service on Successful Treatment. To analyze rescue service and hospital data to determine effect on injured of actions taken at the accident scene. G. Asche. HRIS 51. IRRD 702354. ACTIVE

294. WORKING COMMITTEE FOR COMMUNICATION RESEARCH (Arbeitsgemeinschaft Fuer Kommunikationsforschung E. V.): Clemensstr. 86, D-8000, Muenchen 40.

New Project

(1) Use of the Media by Older People and Suitable Forms of Address for Traffic Education. To design traffic education addresses to be given on the media on the theme of traffic education and old people. J. Huber, F. Boeckelmann, G. Maletzke. HRIS 51. IRRD 702359. ACTIVE

295. RESEARCH INSTITUTE FOR KNOWLEDGE OF HUNTING AND PREVENTION OF DAMAGE DONE BY GAME (Forschungsstelle Fuer Jagdkunde Und Wildschadenverhuetung Des Landes Nordrhein-Westfalen): Forsthaus Hardt, D-5300, Bonn 3.

New Project

(1) The Suitability of Animal Grids and the Effectivenss of Animal Warning Reflectors for Federal German Main Roads. To study the effectiveness of animal subways under roads and the use of animal warning reflectors to discourage them from wandering over the road. Ueckermann. HRIS 51. IRRD 702380. ACTIVE

296. ASSOCIATION OF CONSULTING ENGINEERS (Ingenieurgemeinschaft Hertel - Schoen - Mueller-Volton): Franziskastr. 446, D-4300, Essen.

New Project

(1) Determination of Gradients on Large Engineering Structures by Measurements of Noise (Controls According to DIN 1076). To demonstrate that checking gradients of large bridges can be simplified by laser measurements without interfering with traffic flow. K. Hertel, Schoen, Mueller-Volton. HRIS 21. IRRD 702396. ACTIVE

297. INSTITUTE FOR FUTURE RESEARCH (Institut Fuer Zukunftsforschung) Giesebrechtstr, 15, D-1000, Berlin 12.

New Project

(1) Effects of Traffic Restraint in Town Centre Areas on Traffic. The object of the work is to estimate changes in traffic behaviour which might occur if comprehensive traffic restraint measures are implemented. R. Albrech, W. Bormann, U. Oehl. HRIS 54. IRRD 702100. ACTIVE

298. DIPL.-KAUFMANN HANS-PETER FUCHS THEODOR -HEUSS-RING 62, D-5000, Koeln 1.

New Project

(1) Possibilities and Limits of a Comparison of the Operations of Public Transport Companies. To determine systematically the scope of information required by transport operators, local authorities and the State. H. P. Fuchs. HRIS 11. IRRD 702101. ACTIVE

299. TRAPP SYSTEMTECHNIK BREITER WEG 6-8 D-4230, Wesel.

New Project

(1) Analysis and Forecast of Spatial Traffic Distribution and Choice of Transport Mode in Urban Areas from Figures of Land Use. Illustrated by the Example of the Town of Nuernberg. The study was conducted in the urban area of Nuernberg, which is divided into 75 traffic units and in the area around Nuernberg which is divided into a further 6 units. HRIS 12. IRRD 702102. COMPLETE

300. CONSULTING ENGINEERS FOR TRAFFIC PLANNING (Ingenieurgruppe Fuer Verkehrsplanung) Nordhauser Str, 13 D-1000, Berlin 10.

New Project

(1) Possibilities and Limits of Transferring Short Journeys by Car to the Bicycle. To analyze the possibilities of transferring traffic to the bicycle. G. Hoffman, K. Schreiber. HRIS 12. IRRD 702136. ACTIVE

301. ENGINEERING SERVICE NORTH (Ingenieurdienst Nord) Rockwinkeler Heerstr. 111A D-2800, Bremen 33.

New Project

(1) The Course of Infiltration from Infiltration Basins and Ways of Affecting it. Over a period of several years a comprehensive survey is to be made of infiltration basins to determine the causes of automatic densification, the expected decrease in the infiltration potential of the planned basins and ways of reducing the automatic densification. Lange. HRIS 22. ACTIVE

302. DIPL.-ING. R. RUCK STROMBERGER STR. 43 D-6530, Bingerbrueck.

New Project

(1) Inspection of the Literature. Studies on Fillers. A summary includes the most important information obtained from the literature survey. R. Ruck. HRIS 35. IRRD 702163. ACTIVE

303. ROAD RESEARCH LABORATORY ESSEN (STRASSENBAULABORATORIUM ESSEN) Lierfeldstr, 49 D-4300, Essen-Altenessen 12.

New Project

(1) Behavior of Samples of Surfacings and Basecourse Trafficked for Many Years and Containing Chippings with Various Impact Strengths: Part 1- Preliminary Study and Selection of Suitable Road Sections for Sampling. Comparative samples from unstressed parts of the road are to be used to show the condition before the introduction of traffic loading. A. Schniering. HRIS 35. IRRD 702162. ACTIVE

GHANA

Supplementary Survey - 1980

S.K. Akrofi

The 1980 supplementary survey of Ghana was reported by Mr. S. K. Akrofi. Building and Road Research Institute, who listed six projects not previously reported. all of which are shown to be active.

1. COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH: Accra

a. Building and Road Research Institute (BRRI): University Campus. Kumasi

(65) Accessibility and Traffic Improvement in Central Accra (CBD). To determine traffic data for the central district of Accra to justify the fixing of a level of improvement of accessibility. of parking and of traffic circulation in that area. E. A. Kwakye and others. HRIS 13. ACTIVE

(66) Rural Road Transport and Mobility Studies. To determine the extent of trip-making and the mobility of rural households. J.D.N. Riverson and others. HRIS 16. ACTIVE

(67) Utilization of Mining Wastes. To study the availability and potential uses of mining wastes. A. A. Hammond. HRIS 34. (Citations) ACTIVE

(68) Pozzolana Project. Arrangements are being made to set up a pozzolana production plant. A. A. Hammond. HRIS 34. (Citations) ACTIVE

(69) Pedestrian and Driver Behavior at Pedestrian Crossing Points in Kumasi. To reduce pedestrian accidents at crossing points in the City Center Area. E. A. Kwakye, J. Riverson, A. Acquaye. HRIS 52. ACTIVE

(70) Kumasi Traffic Volume and Travel Time Studies. To develop measures to decrease traffic congestion and accidents. E. A. Kwakye. J. Riverson. A. Acquaye. HRIS 55. ACTIVE

GREECE

SUPPLEMENTARY SURVEY

1980

G.P. Macris

The 1980 Survey of Greece was reported by Dr. G.P. Macris, Chairman, the Greek Road Federation. He reported 9 new projects, one of which is shown to be complete.

1. MINISTRY OF PUBLIC WORKS (Ypourgion Dimosion Ergon): 182 Charilaou Trikoupi Street, Athens, 708

a. Public Works Research Center (Kentron Erevnon Dimosion Ergon): 166 Pireus Street, Athens, 310

(23) Extensive Computerized Data Bank. Data relating to highway inventory, traffic count, origin and destination, axial load and socio-economic data to be used in highway planning. G. Gerogianopoulos. HRIS 12. ACTIVE

3. NATIONAL TECHNICAL UNIVERSITY OF ATHENS, CIVIL ENGINEERING FACULTY: (Ethnikon Metsovion Polytechneion, Scholi Politikon Michanikon): 42 Patison Street, Athens 147

c. Chair of Railways and Transport: Same address

(12) A System of Busways and Bus Lanes in the City of Athens. Study of possibility of segregation of public and private modes of transport to create balanced situation where personal mobility needs are met but traffic congestion is reduced. B. Stergiov, N. Naskos. HRIS 12. ACTIVE

(13) Data Base Management Systems in Airports and Airports Authorities. Case study at the Athens Hellenikon Airport leading to design of a data base management system for use in an airport authority. F. Mertzanis, N. Kokolios, I. Diamantis, N. Maroudias. HRIS 11. ACTIVE

(14) Multi-Modal Model. Use of a multi-modal model for planning completion of various Greek transportation networks. F. Mertzanis, V. Psaraki. HRIS 12. ACTIVE

(15) A Realistic Method for the Preparation of Transport Network Investment Programs under Various Constraints. Identification and selection of proposed highway networks which will be less affected by disruptive factors such as budget constraints, socioeconomic evolutions, energy problems, etc. C. Abacoumkin, B. Stergiou. HRIS 12. ACTIVE

(16) Research on the Relations Between Intercity Trip Making Rates and Land Use Characteristics. Analysis of completed origin destination survey to identify required changes in road network and existing land uses to improve accessibility of deprived and isolated areas of the country. C. Abacoumkin, V. Psaraki-Kaloupsidis, B. Stergiou, S. Gourgioti. HRIS 15. ACTIVE

(17) The Introduction of Dial A Bus System in an Athens Suburb, and its Effect on a Modal Split. Study to determine impact of a dial a bus system on private car and bus travel from Marousi suburb. C. Abacoumkin, F. Karamitsos, A. Koymoutsis. HRIS 16. ACTIVE

(18) Road Traffic Noise in an Urban Area. Study to determine relationship between traffic noise, street width and building height in Athens. F. Karamitos, N. Trimis. HRIS 17. COMPLETE

3. (19) Analysis of Traffic Accidents in the Athens Urban Area. As an accident reduction measure, determine number and type of accident relationship to vehicular-pedestrian traffic, roads and intersection characteristics and land use. C. Abacoumkin, B. Stergiou, B. Psaraki-Kalouptsidis, F. Karamitsos. HRIS 51. ACTIVE

GUATEMALA

Supplementary Survey - 1980

Jorge F. Erdmenger

Ing. Jorge F. Erdmenger, General Manager, Ingenieros Consultores de Centro America, Ltd., reported there were no research projects started since the last survey

HONDURAS

Supplementary Survey 1980

Francisco Figuero Z.

The 1980 survey of Honduras was reported by Mr. Francisco Figuero Z., Executive Secretary of the Honduran Road Association. Nine new projects are reported, of which five are shown to be complete.

1. MINISTRY OF COMMUNICATIONS, PUBLIC WORKS, AND TRANSPORT (Ministerio de Communicaciones, Obras Publicas y Transportes): Barrio La Bolsa, Comayaguela, D.C.

a. Department of Highways (Dirección General de Caminos): Same address

(25) Olancho Forestry and Industry Development Program (Third Stage). Supervision of 210 Kms. of secondary roads in connection with operation of the Olancho forestry industrial complex. IDB-SECOPT Executing Unit. HRIS 12. (Citations) FUTURE

(26) Western Region Development Program. Supervision of access road component of agricultural pilot development program. IDB-SECOPT Executing Unit and Consultants. HRIS 12. (Citations) FUTURE

(27) Aguan Valley Development Program (Second Stage). Construction of 50 Kms. of access roads as part of Aguan Valley development. IDB-SECOPT Executing Unit, CONASH. HRIS 12. (Citations) ACTIVE

e. Department of Sectorial Planning (Departamento de Planificacion Sectorial): Same address

(7) Honduras Highway Master Plan. A ten year program based on overall highway and maintenance requirements related to country financial capacity. Consultants and staff. HRIS 12. (Citations) COMPLETE

f. General Directorate of Maintenance (Dirección General de Maintenimiento): Same address

(9) Maintenance Program Methodology. To determine economic feasibility of projects based on internal rate of return by type of road according to the category and level of maintenance. E. Maldon, T. Tiedken, W. Pastor. HRIS 40. (Citations) COMPLETE

(10) Priorities Method for Maintenance Expenditures. A weighting method to establish priorities for maintenance expenditures based on evaluation of road conditions and development requirements. E. Newbaver, R. Borckert, M. Brant, W. Pastor. HRIS 40. (Citations) COMPLETE

(11) Investigation of Pavement Conditions of the Honduras North Highway. Analysis of pavement based on deflexion method, including base and sub-base conditions. CODINCO-SAYBE and Associates. HRIS 24. (Citations) FUTURE

2. SUPERIOR COUNCIL FOR ECONOMIC PLANNING (Consejo Superior de Planificatión Economica): 3er, Piso, Banco Atlantida, Comayaguela, D.C.

(15) Annual Operating Plan 1980. To establish distribution of resources in accordance with the goals and objectives of the National Development Plan. C. Panameño, M. Perdomo, F. Osorio. HRIS 12. (Citations) COMPLETE

(16) Road Projects Evaluation 1979. An evaluation of progress of road projects, including technical and administrative procedures for construction. C. Panameño, M. Perdomo, J. Destephen, F. Osorio. HRIS 33. (Citations) COMPLETE

HONG KONG

Supplementary Survey - 1980

B.K. Catchick

The 1980 survey of Hong Kong was reported by Mr. B.K. Catchick, Engineering Development, Public Works Department. Two new projects are reported.

1. PUBLIC WORKS DEPARTMENT: Murray Building, Garden Road, Hong Kong

(52) Additional Cross Harbour Facilities - Study of Options. A study of methods to increase capacity of an existing cross-harbour road tunnel and determination of location of additional crossings. M. M. Rich, K. F. Nip. HRIS 12. ACTIVE

(53) Priority Study of Bus Shelter Provision. A study to determine vehicle and passenger utilization of bus stops and develop a measure of need and priority for provision of bus shelters at individual stops. K. F. Cheung. HRIS 16. (Citations) ACTIVE

HUNGARY

Resurvey - 1980

Tibor Marfái

The 1980 resurvey of Hungary was reported by Mr. Tibor Marfai, Head of the Highway Safety and Traffic Engineering Division, Highway Transportation Research Institute. One hundred sixty-eight projects are included, 41 of them for the first time. Of the total, 74 are shown to be complete.

1. HIGHWAY TRANSPORTATION RESEARCH INSTITUTE (Közuti Kolekedesi Tudomanyos Kutato Intezet): Than Karoly u. 5, Budapest XI

(1) Continuous Observations of "Black Spots" for Accidents on the Road Network. To identify sections with abnormally high accident frequency. T. Balogh. HRIS 51. COMPLETE

(3) Effect of Speed Limits on Traffic. To specify the effect of speed limits on different traffic situations and explore the optimal limitation policy. M. Biró. HRIS 54. COMPLETE

(11) Results of Research Aimed at Reducing the Atmosphere-Polluting Effect of Road Traffic. To determine and develop methods for reducing motor vehicle emissions. O. Flamisch. HRIS 17. COMPLETE

(16) Steel Bridge Construction. Improvement of steel bridge constructions and their planning methods. I. Gallik. HRIS 25. ACTIVE

(18) Effect of Advisory Speed Signs on the Traffic of Minor Roads. A theoretical and practical study of the effect of such signs placed on sharp curves of minor roads. M. Torok. HRIS 54. COMPLETE

(20) Country-wide General Highway Network Development Plan. To determine the framework of network planning in five-year periods until the end of the century. F. Takacs, A. Berg. HRIS 12. ACTIVE

(21) Analytical Planning Methods in Highway Traffic. Development of separate trip generation models for week-day and week-end traffic. B. Vasarhelyi, J. Monigl. HRIS 55. COMPLETE

(22) Countrywide Traffic Census 1975. M. Biro. HRIS 55. COMPLETE

(23) Transport Costs as a Function of Road Characteristics and Traffic. Elaboration of new methods for efficiency studies based on continuous data supplied by a test car. A. Berg. HRIS 16. COMPLETE

(24) Highway Network Development Based on Analytical Methods. Elaboration of new analytical network planning methods including alternative solutions and new computer program package. F. Takacs, I. Vadai. HRIS 12. ACTIVE

(26) Investigation of Air Pollution Caused by Stationary Road Machinery and Plants. Quantitative and qualitative determination of gaseous air pollution from asphalt mixing plants. Mrs. L. Fodor. HRIS 17. ACTIVE

(27) Stipling of Existing Asphalt Topping. Use of a plant mix layer to increase the skid resistance of worn and polished asphalt surfaces. L. Gaspar, Jr. HRIS 24. ACTIVE

(29) Appraisal of the Hungarian Traffic and Operating Conditions from Viewpoint of Emissions. Evaluation of the effects of different traffic conditions on the emission of harmful substances. T. Meretei. HRIS 17. COMPLETE

1. (31) Skid Resistance and Evenness of Pavements. Develop and manufacture skid-resistance measuring instrument for speeds up to 130 km/hr.; establish values of skid-resistance for wet road surfaces; develop instruments for measuring pavement roughness. L. Racz. HRIS 24. ACTIVE

(32) Revision of the Dimensioning of Roads for Traffic Needs. Extension of methods on the 30th hour volume, variation in volumes by hours, by Sunday and workday traffic, separation of traffic, and economics. Cs. Koren. HRIS 55. COMPLETE

(33) Continuous and Detailed Observation of Highway Traffic. Observations on 81 principal sites for regularities in traffic flow and on 221 secondary sites for determining ADT based on 5 counts per year; measurement of speeds on various road types. V. Kolozsvary, Cs. Koren. HRIS 55. COMPLETE

(34) Traffic Flow Analysis. Research on the relationship between traffic parameters, highway geometry and speeds. A. Roszmusz. HRIS 55. COMPLETE

(38) Distribution of Credits and Expendables for Development, Maintenance, and Operation of Road Networks. Establish a practical method for distributing finances between various administrative road units on basis of analysis of road networks. E. Szlateny. HRIS 14. COMPLETE

(39) General Development Plan of the National Highway Network. To develop a plan for future highways that will fit into regional development plans and provide ways and schedules for that development. F. Takacs, A. Berg. HRIS 12. COMPLETE

(41) Planning and Management Systems of Highway Transportation Resources. To define basic data system for resources economy to include the consideration of highway transportation resources, elaboration of production balances and price system principles. Mrs. Hubay, G. Marosvari. HRIS 15. ACTIVE

(42) Model for Rationalizing and Employing Urban Autobus Transit in Planning Mass Transit in Debrecen. A mass transit plan development for this city in Eastern Hungary. E. Trepper, I. Zsirai. HRIS 12. COMPLETE

(44) Augmentation of Transportation Productivity. Analysis of technical, organizational and economical problems of transportation so as to decrease labor requirements and better utilize machinery. T. Radoczy. HRIS 12. ACTIVE

(46) Corrosion Tests of Post-Tensioned Concrete. Investigation of injections of mortar with various water-cement ratios as to ability to fill cable channels of posttensioned concrete girders. T. Pal. HRIS 25. COMPLETE

(47) Service Life of Bituminous Pavements. Twice-yearly survey of 32 500-meter long sections of pavement to measure surface wear and characteristics in order to determine deterioration. L. Gaspar. HRIS 24. ACTIVE

(48) Development of Pavement and Construction. A study of the resistance parameters of new materials in order to conserve energy and reduce costs of highway construction due to energy shortage and increasing material prices. T. Boromissza. HRIS 24. ACTIVE

(51) National Highway Project in the VI Five Year Plan. To select the main objects of the national highway project, prove their efficiency, and a long-term plan for the period 1980 to 1995. A. Berg, E. Szlatenyi, F. Takacs. HRIS 12. COMPLETE

(52) A Complex Study on Passenger Transportation on Highways. To develop a dynamical, progressive transportation system. A. Horvath. HRIS 11. COMPLETE

1. (54) Evaluation and Publication of Traffic Census Data. Participation in the census of international traffic for the Organization for Cooperation of Socialist Railways. M. Biro. HRIS 11. COMPLETE

(55) National Traffic Census Data, 1975. To process and analyze this data, prepare reports and computer printouts. M. Biro, V. Kolozsvary. HRIS 11. COMPLETE

(56) Condition and Duration of Asphalt Pavements. Research on condition of asphalt test sections to measure factors relating to durability and wear, and a quick and effective method for testing. L. Gaspar. HRIS 24. ACTIVE

(57) Load Bearing Capacity and the Improvement of Lacroix Deflectograph. Study of load bearing capacity of pavement structures, using computer programs and supplementary automatic loading equipment. J. Baksay. HRIS 24. ACTIVE

(58) Culverts from Flexible Corrugated Plates. To investigate the economies resulting from the use of these plates, as to materials, labor and construction time. L. Halmagyi. HRIS 25. COMPLETE

(59) Upper Strain Limit in Concrete Bridge Structures. Calculation of new upper strain limit with parametric and nonparametric statistical analysis of data on breaking strength of test cubes. L. Harkanyi. HRIS 32. ACTIVE

(60) Nondestructive Concrete Testing Methods. To improve the testing of concrete with the Schmidt hammer, and the effects of new cements and the age of concrete. A. Revfalvi. HRIS 32. COMPLETE

(61) Use of Rubber Granulatum Obtained from Waste Tires in Asphalt Pavements. To determine the optimal amounts and types of rubber granulatum to be used in asphalt pavements and to construct a test road. E. Szentes. HRIS 34. COMPLETE

(62) Traffic Accident Analysis Method Based on the Maneuvers of the Participant Vehicles. Develop a new computer-aided method for analyzing these accidents, taking into consideration the vehicles, their actions, the drivers, the road surface, etc., K. Csucs. HRIS 51. COMPLETE

(63) Speed Estimation Ability of Drivers. To determine ability of drivers to estimate their own speed and the effect of changing environmental features such as pavement type and width, exits, etc., and the behavior at speed violations. L. Ruppert, M. Draskoczy. HRIS 52. COMPLETE

(64) Analysis, Control and Reduction of Environmental Noise Pollution Generated by Urban Traffic. Study of factors related to noise effects from traffic in typical patterns at intersections and pedestrian crossings; develop a noise estimation model that will predict effects of actions taken to reduce the noise. G. Ujsaghy. HRIS 17. ACTIVE

(65) Acoustical Problems in the Environment of Highways. Develop patterns of noise spread as a guide in highway planning; determine methods for planning noise barriers at different levels and volumes of traffic. P. Bite. HRIS 17. ACTIVE

(66) Conflict Analysis Based on Driver Behavior, Vehicle Movement and Traffic Patterns. Study of new methods for measuring prime factors affecting highway safety, such as speed-selection, overtaking, the process and psychophysical influence on drivers, their behavior during maneuvers. M. Droskoczy. L. Ruppert. HRIS 52. ACTIVE

(67) Comprehensive Traffic Regulation in Urban Areas. Studies of unified methods for traffic control, parking, pedestrian movements, urban transportation systems, and traffic regulations. T. Jakab. HRIS 54. COMPLETE

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(68) Evaluation of Existing Traffic Signal Systems and Their Improvement. Study of single and synchronized systems; public transportation in synchronized systems; determination of needed controls; and signal system improvements. P. Lanyi. HRIS 54. COMPLETE

(69) Inventory System for Highway Intersections and Pedestrian Crossings. To develop a practical inventory system for use by county highway offices for traffic engineering, maintenance and accident analysis purposes. I. Lovas. M. Janki. HRIS 54. COMPLETE

(70) Design of, and Traffic Control on Climbing Lanes. Study of the flow of traffic, use and accident records of these lanes, to develop planning and signing guides. M. Torok. HRIS 54. COMPLETE

(71) Technical Instructions for Some Traffic Control Measures and for the Use of Optical Delineations. Includes optical delineators, highway signposts; bus stops; restrictions on slow-moving vehicles and accidents; no-passing restrictions. S. Szilhati, A. Roszmusz, T. Balogh, E. Szabo. HRIS 54. COMPLETE

(73) Factors Reducing Capacity of Urban Roads and Intersections; Relations Between Capacity, Traffic Density and Speed. To develop a computer method for determining these matters. M. Gal. HRIS 55. COMPLETE

(74) Observing the Progress of Traffic on Highways. Evaluation and estimation of volume and speed patterns in highway traffic based on data collected on 94 continuous and 225 temporary (5 day per year) stations. V. Kolozsvary. HRIS 55. COMPLETE

(75) Regional Freight Transportation Models and Their Practical Realization. Study of transportation service levels in Gyor, patterns, loading capacity and actual roadway use. A. Bodor. HRIS 13. COMPLETE

(76) Load Bearing Capacity of Driven Piles in Granulated Soils. Study of the relationship between the number of blows and the breaking load of piles in these soils, for determination of the pile bearing capacity. T. Pal. HRIS 62. ACTIVE

(77) Urban Passenger Traffic Estimation System. Develop an integrated system for passenger traffic data collecting and processing in provincial towns; develop model system for traffic estimation/generation, modal split and assignment; prepare computer package program. J. Monigl. K. Scherr. HRIS 13. COMPLETE

(78) Average Fuel Consumption of Urban Buses Determined by Mathematical Models. Preparation of model based on traffic and loading condition-data for predicting fuel consumption, relying on multi-correlation and regression analysis of past measurements. J. Gardos. HRIS 17. ACTIVE

(79) Soil and Water Pollution Generated by Highway Traffic. Study of the polluting factors of highway traffic services and their effects on soil and water; suggestions for improvements. L. Fodor. HRIS 17. ACTIVE

(80) Pollution Generated by Highway Traffic and Environmental Protection in Recreational Areas. To develop new protection policy for the Lake Balaton area to discover sources and effects of water and soil pollution and noise pollution as related to traffic density at peak and off-peak hours. Gy. Somogyi. HRIS 17. ACTIVE

(81) State of Public Transportation in Small Towns of Hungary. Study of possible role of taxi-bus system for such transportation. A. Bekesi. HRIS 13. COMPLETE

1. (82) Planning Method for Bus Transportation Based on Regional System. Theoretical research on regional-oriented transportation planning and organization, and its practical realization in south Transdanubian planning area. I. Zsirai. HRIS 13. ACTIVE

(83) Analysis of Goods Flows in Komarom County. Review of production and consumption and of freight transportation in Komarom County, with proposals for allocating tasks among carriers and development of transport and loading technologies. S. Szele. HRIS 13. COMPLETE

(85) Condition Testing and Durability of Asphalt Pavements. Continued twice-yearly testing of 30 500-meter asphalt-paved test sections in the public road network under way since 1972 involves relation between observed and estimated condition data and study of deterioration and surface abrasion, leading to elaboration of technical directives on such testing. L. Gaspar. HRIS 24. ACTIVE

(86) Construction of Test Section on Roughening of Existing Asphalt Pavements. Following construction in October 1976 of 3 test sections of asphalt pavement and continuing testing of them through 1977 and 1978, technical directives will be developed relating to such construction. L. Gaspar. HRIS 24. COMPLETE

(87) Transversal Distribution of Loads on Highway Bridges. Comparison of load distribution data from test loading of bridges with data developed theoretically is expected to result in modification of design directives to afford savings in construction. L. Harkanyi. HRIS 25. ACTIVE

(88) Classification of Road Bitumins According to Their Viscosity Characteristics. By a rotation viscometer measurement program it is expected that viscosity curves for bituminous materials can be refined so as to improve mixing and other processes used in highway construction. E. Szentes. HRIS 31. ACTIVE

(89) Elaboration of a Uniform Accident Registry System for the Highway Directorates. To develop and publish uniform accident data collection procedures utilizing the cooperation of highway and other agencies concerned. S. Szilhati. HRIS 51. COMPLETE

(91) Analysis of Traffic Conditions Causing Air Pollution by Vehicle Motors. To analyze how urban and rural traffic conditions in Hungary affect pollution emission by characteristic vehicle types, and identify possibilities for reducing it. T. Meretei. HRIS 17. ACTIVE

(92) Prognosis of Highway Traffic Noise on Urban and Rural Roads. To develop method for reliable prediction of traffic noise on the basis of traffic and environment parameters. B. Buna. HRIS 17. ACTIVE

(94) Elaboration and Practical Implementation of a Regional Planning Method for Bus Transportation. To develop plans for improving interurban bus transportation, including analysis of the bus network nationwide, identifying its functions, and developing modernization plans. I. Zsirai. HRIS 11. ACTIVE

(95) Analysis and Evaluation of State Highway Network Adequacy. To gather and evaluate data characterizing highway adequacy and determine necessary work programs. M. Koller. HRIS 12. COMPLETE

(96) Fulfillment and Coordination of Tasks in Connection with Transeuropean North-South Motorways (TEM) Design. Cooperative work with 10 European countries to insure completion of the motorway design connecting the Baltic Sea with Mediterranean and the Near East. B. Vasarhelyi. HRIS 12. ACTIVE

(97) Design of Stabilized Road Base. Develop standards for stabilizing bases using lean concrete, sand, fly ash, granulated slag, lime and combinations of these materials. L. Gaspar. HRIS 24. COMPLETE

HUNGARY (contd)

1. (99) Some Highway Transportation Problems of Heavy Machines; Mutual Effect Between Transportation Facilities and Pavement Construction. A study of the problems of relating vehicles for the transport of extremely heavy loads to the design of the pavement structures over which the loads are to be moved. A. Toth. HRIS 24. ACTIVE

(100) Analysis and Evaluation of Road Pavement Surface Evenness. A study of measuring devices, available or to be developed, for measuring pavement smoothness, including consideration of the function of speed in such measurements. J. Annar. HRIS 24. ACTIVE

(101) Roughening of Existing Asphalt Pavements Using Drainage Asphalt Courses. A study of the use of permeable overlays of asphalt mixes to eliminate slipperiness of surfaces adequate from the standpoint of bearing capacity. L. Gaspar, A. Gorgenyi. HRIS 24. ACTIVE

(102) Transversal Distribution on Bridges. A comparison of the actual distribution of wheel loads on bridges with computed values based on theoretical assumptions. A. Revfalvi. HRIS 25. ACTIVE

(103) Classification of Road Bitumens According to Their Viscosity Characteristics. Study of bitumens of various productions according to their viscosities as a quality control parameter. E. Szentes. HRIS 31. ACTIVE

(104) Specific Energy Demand of Asphalt Mixtures. To determine the energy demand for the mixing, transporting and laying of asphalt mixtures. I. Kasa. HRIS 31. ACTIVE

(105) Catalogue for Additives Used in Bridge Construction. To systematize the additives used for bridge construction concretes and assemble these into a guide for designers. T. Szabo. HRIS 32. ACTIVE

(107) State Highway Bridge Maintenance. A technical guide for repair work on bridges, such as painting, repair of damage, joints, etc. Gy. Roknich. HRIS 40. COMPLETE

(109) Development of Asphalt Maintenance Technologies Using Cationactive Bituminous Emulsion. To develop these technologies for the repair of asphalt surfaces using cold mixtures or surface treatments with cationactive bituminous emulsion binder. L. Kuna. HRIS 40. ACTIVE

(110) Spread of Accident Data Analysis Carried Out Together with State Insurance Company. Study of data on road accidents with material damage, systems for recording and analyzing property and personal accidents and analyses for establishing preventative relationships. P. Hollo. HRIS 51. ACTIVE

(112) Analysis of Vehicle Need and Road Capacity Connected with Public Road Service of Container Terminals in Debrecen, Budapest, Jozsefvaros and Szolnok. An analysis of the road network capacity and the road vehicles serving these terminals as to their needs. Cs. Kilian. HRIS 54. COMPLETE

(113) Traffic Regulation of Roads in the Vicinity of Schools and Playgrounds. To publish a guide for traffic engineers based on principles and devices of regulation from foreign and Hungarian directives for preventing accidents to children. S. Szilhati. HRIS 54. COMPLETE

(114) A Guide to the Initiation of Local Speed Limitations. A study of the role of speed in highway accidents, the possibilities of speed control, the justifications of limits and applications as a function of geometric or traffic conditions. T. Balogh. HRIS 54. COMPLETE

HUNGARY (contd)

1. (115) Revision and Improvement of Orientation Traffic Sign System. A study of the application, usage and acceptance of a new information system on principal network, with consideration of the differences between design principles and practice. T. Marfai. HRIS 54. COMPLETE

(116) Possibilities of Peak Traffic Carrying-Away, Using Traffic Engineering and Traffic Regulation. A study of regulating systems for one-way peak traffic, as well as noting and establishing extra lanes for mass transportation means, with theoretical solutions as well as designing and operating the systems. M. Gal, P. Lanyi. HRIS 54. ACTIVE

(117) The Principles of an Overall Traffic Regulation on the Area of Towns. To increase the capacity and traffic safety on exiting roads and intersections for road traffic without the need for additional construction, but through regulation methods, means and apparatus. J. Jakab. HRIS 54. COMPLETE

(118) Speed Measurements and Analysis of Highway Network. Measurement of average travel speeds, determination of relationship between highway characteristics, tracing, pavement width and relation of speeds of light and heavy vehicles. Cs. Koren. HRIS 55. COMPLETE

(119) Complex of Observation of Highway Traffic 1979. Quantity and regularity analysis on cross sectional observation network and speed measurements and analysis. V. Kolozsvary, I. Antal. HRIS 55. COMPLETE

(120) Arrangement and Carrying Out of State Highway Cross-sectional Traffic Count in 1980. To prepare for the traffic count planned in 1980 for ensuring the undisturbed carrying of this extensive traffic characterization and to present reliable volume data for design and maintenance specialists. M. Biro. HRIS 55. ACTIVE

(121) Complex Urban Traffic Development Method and Model. To characterize passenger and freight traffic in a number of towns with preparation of computer programs for use in forecasting. J. Monigl, K. Scherr, Z. Ujhelyi. HRIS 55. ACTIVE

(124) Embankment Foundation Using Geotextile Materials. A study of the use of geotextile materials to improve the bearing capacity of an embankment quickly and economically. L. Gaspar. HRIS 62. COMPLETE

New Projects

(125) Traffic Education in the School. Analysis of traffic operations by various school age groups for the purpose of improving traffic education. J. Papp. HRIS 11. ACTIVE

(126) Main Data of the National Highways. Comprehensive report of the construction modernization and maintenance activities on national highways during 1979. M. Dosekne-Mohácsi. HRIS 11. ACTIVE

(127) Information System for Highway Management Relying on a Numeral Data Basis of the Road Traffic. Development of a comprehensive system for relating numerically a broad stratum of road data for use in decision making involving virtually the entire highway field. A. Skrabski. HRIS 11. ACTIVE

(128) Practical Adoption in a Provincial Great Town of the Method Elaborated for the Optimalization of the Mass Communication Networks. Use of computer methods for obtaining optimum traffic operation in a large city. J. Monigl, I. Zsirai. HRIS 12. ACTIVE

HUNGARY (contd)

New Projects

1. (129) Search After Establishing Relations and Coherences for the Investigations of the Efficiency of Highway Development Work. Investigations into the relation between roadway characteristics and such items as energy consumption, traffic operations, maintenance, etc. E. Faludy, J. Gardos. HRIS 12. ACTIVE

(130) Determination of the Prospective Road Traffic and Motor Vehicle Park. A comprehensive study of traffic operations and utilization of a vehicle parking area. F. Takács. HRIS 13. ACTIVE

(131) The Transportation Possibility of Sugar-Beet by Water; the Raw Material Supply of the Sugar Factory in Ercsi. This study showed that transportation costs for sugar-beets to the Ercsi factory would be 20-30% higher by water transportation than by present methods. L. Nagy. HRIS 15. COMPLETE

(132) Elaboration of a Measuring Method Suitable for the Evaluation of the Level of the Urban Mass Communication. This part of a coordinated research program is directed toward determining the qualitative value of reduced travel time involving greater distance travelled as opposed to shorter distance travelled. A. Horvath. HRIS 15. ACTIVE

(133) Investigation of the Characteristic Travel Pattern in the Passenger Traffic. Investigations of travel patterns based on moves, employment, vehicle ownership, etc. of 65000 people in 10 provincial towns. J. Monigl, E. Nagy. HRIS 16. ACTIVE

(134) Reducing Possibilities of the Air Pollution Effect of the Motor Vehicles by Traffic and Transport Organizational Arrangements. Artificial runs by various vehicles have been made on test stands simulating actual courses taken by vehicles to test for pollution reductions by varying traffic operations. T. Merétei. HRIS 17. ACTIVE

(135) Determination of the Abrasive Resistance Requirements of Skid-freeing Rubbles. An investigation seeking local aggregates that could be used to improve skid resistance of sheet asphalt. E. Szentes. HRIS 24. ACTIVE

(136) Development of a Depth Indicator for Wheel Path/Rut/Meter. Development of a mobile device for continuous measurements at 5 transverse points of a pavement surface, with data recorded on punched tapes. J. Baksay. HRIS 24. ACTIVE

(137) Standardization of the Stressing of Flexible Road Structures. Furthermore of Their Widening and Strengthening. A review of current standards and their operation for flexible road structures with a view toward preparation of a new standard. L. Gaspar. HRIS 24. ACTIVE

(138) Protection of the Reinforced Concrete Piles Against the Deteriorative Effect of the Free Carbonic Acid. A comprehensive study of concrete corrosion with particular emphasis on the effect of free carbonic acid in groundwater against concrete piling. T. Szabo. HRIS 25. ACTIVE

(139) Application of Power Station Flue Ash in Asphalt Mixture. A study of various fly ashes in asphalt mixtures for the purpose of preparing national standards. L. Gaspar, Jr., HRIS 31. ACTIVE

(140) Energy Sparing and Environment Saving Asphalt Mixing Technologies. An investigation of drum-mixing of asphalt mixtures, including evaluation of the equipment and methods of eliminating air pollution. M. Dollmayer. HRIS 33. ACTIVE

New Projects

1. (141) Effect and Economy of Snow Fences Beside Highways. An investigation of permanent and movable snow fences with an economic comparison against no fences at all. E. P. Foludy, A. Scepesházy. HRIS 40. ACTIVE

(142) Investigation of the Phosporous Acid Transport from Prahovo to Peremarton. A study of the costs of transporting phosphoric acid by rail or boat, with the required supporting highway transport. J. B. Barta. HRIS 51. COMPLETE

(143) Computer Analysis of the Accident Problems at the Present for the Prevention and Traffic Safety Propaganda. Studies of accidents relating to lack or improper emphasis of anti-accident propaganda, choice of inadequate speed, and an analysis of moped (scooter) accidents. A. Csucs. HRIS 51. ACTIVE

(144) Division into Groups of the Road Traffic Accidents and Detailed Analysis of Each. A comprehensive accident study including types of vehicles, type and age of driver, pedestrians, etc., with particular emphasis on injury and death. A. Csucs. HRIS 51. ACTIVE

(145) Evaluation of the General Accident Survey on the National Highway Network. A central computer analysis of accident data on the national highways for use in policy making for accident prevention programs. S. Szilháti. HRIS 51. ACTIVE

(146) Examination of the Sites and Situations that are Typical for the Conflicts Between Pedestrians and Drivers in the Urban Traffic. A study of the relationship between pedestrians and drivers with emphasis on modes of communication at signalized and non-signalized intersections. A. Csucs, I. Kiss. HRIS 51. ACTIVE

(147) Analysis of Traffic Conflicts Based on the Behavior of the Driver and on the Coherence Between the Vehicle Motion and Traffic Characteristics. Examination of the Change of Traffic Lane. A study of lane changing in built up areas, its effect on traffic flow, and driver characteristics during this maneuver. M. Draskóczy, L. Ruppert. HRIS 52. ACTIVE

(148) Influencing the Habits in Traffic by Propaganda Methods. By studying why certain pedestrians violate the crosswalk signal to develop publicity campaigns against this. J. Papp. HRIS 52. ACTIVE

(149) Preparation of the Railway Crossing Registers, Modernization of the Economic Investigation Method. Correction and updating of central and regional data on railroad crossings and development of an economic method of evaluation of need. Gy. Flórian. HRIS 54. ACTIVE

(150) Automatic Traffic Control System for the Motorways near M.1. and M.7., Including Their Budapest Approach Sections. Development of a plan for automatic traffic control for two important highways near Budapest, including provisions for metering access to these highways at certain traffic levels. A. Roszmusz, B. Vásárhelyi. HRIS 54. ACTIVE

(151) Barring of Places of Roadwork. Updating present standards for limiting roadwork under certain conditions of traffic and road classification. I. Lovas. HRIS 54. ACTIVE

(152) Heightening the Safety on Pedestrian Crossing by Application of Road Signals. A search for calling attention to the driver of hazardous pedestrian crossings, with emphasis on signing, stripping, refuges and redesign. M. Török. HRIS 54. ACTIVE

(153) Improvement of the Guiding System on the Hungarian Road Network. A completed study of deficiencies of roadway route numbering has led to preparation of a new manual for route renumbering to better inform the public. T. Márfai. HRIS 54. ACTIVE

3. TECHNICAL UNIVERSITY OF BUDAPEST: Müegyetem 3, Budapest XI

(2) Digital Measuring Equipment for Road Surface Irregularity. Development of an electronic device to permit direct digital reading of wave frequencies generated by passage of the tricycle-mounted measuring equipment. Cs. Forrassy, K. Ambrus. HRIS 24. ACTIVE

(3) Use of Local Materials in Asphalt Pavement Structure Building of Freeways. To investigate possible use of local materials in asphalt pavements. I. Pallos, E. Nemesdy. HRIS 35. ACTIVE

(4) Analysis of Highway Traffic Accidents in Budapest; Methods for Improving Highway Safety. To detect relations among road factors, traffic patterns, traffic regulations and safety. S. Koller, I. Fi. HRIS 51. ACTIVE

(5) A Complex Study on the Structure and System of Quarter-Centers and District Centers in Budapest. Analysis of the needs for connections between centers and national road network, town road network and public transportation, and other problems related to twon planning. Zs. Papay. HRIS 16. COMPLETE

a. Highway Engineering Department: Budapesti Muszaki Egyetem Utepites Tanszék, Same address.

(6) Specification and Testing of Bituminous Materials. Modernization of the quality control system for bituminous materials. T. Buocz. HRIS 31. COMPLETE

(7) Problems of Construction Technology of Bituminous Pavements. Determination of best variants of hot-rolled sheet asphalts with an anti-skid treatment as well as problems of layered construction. T. Buocz. HRIS 31. ACTIVE

(9) Budapest Transportation Development Plan. To develop and apply computers to elaborate on the plan, with models of traffic generation, distribution and assignment. A. Benyei. HRIS 15. ACTIVE

New Projects

(10) Investigation of the Optimal Schedule for the Municipal Traffic Investments by Analysis of the Adequacy of the Existing Road Network and of the Probable Results of its Development. A highway needs study based on road conditions travel speeds, economic impact, highway safety and environment will be followed by a budgetary process for selecting project development. S. Koller. HRIS 14. ACTIVE

(11) Determination by Static Triaxial Examinations of the Inner Friction and the Cohesion of Asphalt Materials as a Function of the Composition. An investigation of several asphalt mixtures by triaxial testing for determining the best factors influencing inner friction and cohesion of the mixtures. E. Nemesdy, K. Török. HRIS 31. ACTIVE

(12) Examination of the Mechanical and Endurance Features of Asphalt Materials as a Function of the Composition. By altering parameters of composition to test various asphalt specimens for the modulas of elasticity, lingering deformation and endurance. E. Nemesdy. HRIS 31. ACTIVE

d. Department of Reinforced Concrete Structures: Stoczek utca 2, Budapest XI

(2) Improving of Multi/Girdered Prestressed Concrete Highway Bridges Without Medial Crossbeams. To determine the need for crossbeams. G. Tassi. HRIS 25. ACTIVE

(3) Design of Load Bearing Structures Based on the Probabilistic Theory. To study design methods and specify safety on the basis of optimal risk in an effort to reduce costs. S. Szalai. HRIS 25. ACTIVE

HUNGARY (contd)

3. e. Institut for Transportation-technik and Organization: 1092 Budapest Kinizsi u. 1-7

(1) Characteristics Determining Traffic Flow in Cities. To determine space and time characteristics of diverse urban streets. E. Gilicze. HRIS 55. ACTIVE

(2) Highway Transportation System Efficiency at Different Levels. Study of internal and external efficiencies on intermodal, intersectoral, interregional and international levels, and the interrelations among these indices. K. Kadas. HRIS 11. ACTIVE

(3) Video Road Traffic Analysis. To use a car-mounted computer with TV attachments to measure and evaluate traffic flow characteristics. J. Gal. HRIS 55. ACTIVE

(4) Complex Measuring Systems and Measuring Methods for Highway Traffic Direction and Organization. To develop devices and methods that ensure data for highway traffic characterization more simply, less costly, and more exactly than at present. J. Gal. HRIS 11. ACTIVE

4. TECHNICAL COLLEGE OF TRANSPORTATION AND TELECOMMUNICATION (Közlekedési 'es Tavközlési Müszaki Föiskola): 9002, Gÿor, Pf 74

(1) Quality Control Methods of Pavement Construction Using Bitumens (Romashkine etc.) with High Paraffin Content. To develop the best construction technology using such bitumens. J. Schwab. HRIS 31. COMPLETE

(7) Abrasion of Bituminous Pavements. Investigation of the technical sources of error causing deformations and decrease of roughness of asphaltic concretes. J. Schvab. HRIS 31. COMPLETE

(8) Determination of Optimum Mixing Time of Bituminous Mixtures. Investigation of the economical and technologically optimum mixing times and the optimal coating in such mixtures. J. Schvab. HRIS 31. COMPLETE

(9) Composition of Urban Road Pavements with High Traffic Density. To develop an optimal composition that will satisfy requirement of high stiffness against plastic deformation and high elasticity against breaking. L. Sziraki. HRIS 24. COMPLETE

(10) Plastic Deformation of Asphalt Pavement Construction and Technological Possibilities of Their Prevention. To develop mechanisms of plastic deformations in the form of wheel tracks and improve asphalt mixtures and laying techniques so as to reduce this problem. L. Sziraki. HRIS 24. ACTIVE

(11) Development of FC-12 High Skid Resistance Asphalt Wearing Courses (Drainage Asphalts) Adaptation of Their Construction in Hungarian Highway Practice, and Working Out Construction Directives. To improve the present practices and procedures. M. Simon. HRIS 31. ACTIVE

(12) Water Insulation and Bituminous Paving for Concrete, Ferroconcrete and Stressed Concrete Highway Bridge Pavements. To develop planned lifetime and stability water insulation that will be an improvement over present practice. M. Simon. HRIS 31. ACTIVE

(13) Evaluation of Service Level for Urban Mass Transportation. Comparative analysis of factors characteristic of service levels, such as traffic circulation travel distances, walking, waiting and changing time. Cs. Koren. HRIS 12. COMPLETE

6. HIGHWAY AND RAILWAY DESIGNING ENTERPRISE, MINISTRY OF TRANSPORT AND POST: Budapest

(2) Utilization of the Electronic Highway Design. Development of a completely electronic design system, so as to permit computer use in analyzing alternative designs. F. Janoshegyi. HRIS 21. ACTIVE

(3) Reconstruction of the Main Highways of Hungary. A program of reconstructing main highways 4 and 5, one leading to the Soviet Union and the other to Yugoslavia. Gy. Gedeon. HRIS 33. COMPLETE

(5) Comparative Analysis of Tensile Resistance of Concrete Parameters. Comparisons of concretes produced under various foreign standards as to bending stresses and different testing procedures. E. Lengyel. K. Lederer, A. Liptay. HRIS 24. COMPLETE

(6) Prefabricated Superstructure for Bridges. To develop prefabricated bridge beams that will require less material and labor. A. Petur. HRIS 25. ACTIVE

(7) Economical Evaluation Method in Highway Planning. An economical evaluation of alternatives for decision making, determining efficiency sequence, in computer-aided planning method. A. Mihalyfi. HRIS 12. COMPLETE

(8) Examination and Construction of Embankment Foundation Peaty Soils. To investigate through construction and operation of a 200-meter test section through peaty soil the ability of peat to support such a structure without additionally consolidating or removing the peat. H. Hejj. HRIS 33. COMPLETE

(9) Utilizing Technical Textiles for Subsoil Draining. To study the utilization of industrial-technical textiles such as synthetic felts for water protection in highway structures, and compare with conventional methods. I. Putits. HRIS 63. COMPLETE

(10) Design Directives for Motorways. Directives to cover such items as junctions engineering structures, operation buildings, pavement structures, traffic measurements, speed, etc. G. Petki. HRIS 21. ACTIVE

New Projects

(11) Development of the Construction of Composite Bridges with Form-work Made of Corrugated Steel Board. The investigation will study conditions necessary for the use of a locally manufactured stay-in-place corrugated steel form. E. Darvas. HRIS 25. ACTIVE

(12) Examination of the Time-Dependent Behavior of Bridges of New Type. To measure the stress deformation of holding elements of concrete on new type in-place bridges, with an evaluation of the results. E. Darvas. HRIS 25. ACTIVE

7. METRO INVESTMENT ENTERPRISE, DEPARTMENT OF TRANSPORTATION (Metro Beruhazasi Vallalat Koslekedesfejlesztesi es Kutatasi o.): 1581 Budapest, Hungaria krt 46, Budapest

(1) Mathematical Models and Computer Programs for Traffic Forecasting and Assignment. To establish a model system for traffic forecasting based on linear regression, for 15 different traffic groups. S. Kadas. HRIS 13. COMPLETE

(2) Environmental Aspects of the Middle and Long-Range Transportation Development Plans. To collect and systematize the environmental aspects of the Budapest transportation planning on the basis of Hungarian and foreign literature, and to evaluate noxious effects on the environment. G. Gyulai. HRIS 15. COMPLETE

7. (3) Introduction of the Homogenous Tariff System in the Budapest Area. To investigate the possibilities of introducing an overall complex tariff system which results in an optimum modal split from the aspects of operation, urban development and traffic policies. B. Duli. HRIS 11. COMPLETE

(4) Traffic Engineering Investigations in Towns with Measuring Cars. To develop an instrumented method of large-scale traffic measurements producing data that could be used on computers to provide for research, planning and operational purposes. J. Sztraka. HRIS 55. ACTIVE

(5) Parking Situation of Budapest. A determination of parking needs and possibilities for the preparation of the Budapest transportation development plan. J. Sztraka. HRIS 54. COMPLETE

(8) Assignment Model for Public Transportation and Its Computer Program. To develop a simplified capacity restraint model for evaluating public transportation routes of 1990, 2010 and 2020. S. Kadas. HRIS 13. COMPLETE

(9) Analysis and Prediction of Freight Transportation in the Budapest Agglomeration. To build a model for predicting freight transportation based on detailed analysis of the 1975 traffic census data. S. Kadas. HRIS 13. COMPLETE

(10) Traffic Analysis of Pedestrian Underpasses. Development of a simulation computer model for traffic design of pedestrian underpass halls. J. Berenyi. T. F. Liska. HRIS 21. ACTIVE

(11) Parking Condition in Industrial Areas. To develop a program for parking demands found in industrial areas, and make arrangements for financing and operating the areas. Gy. Lovas. HRIS 54. COMPLETE

(13) Projective Model of Mass Transportation. Development of a model to include all forms of urban mass transportation considering utilization degree of capacity available. G. Gyulay. HRIS 13. ACTIVE

New Projects

(14) Simplified Road Network Assignment Program. This study developed a simplified assignment schedule for investigating development variables and the development schedule of a complete urban road network. L. Makula. HRIS 12. COMPLETE

(15) Requirement System of the Traffic Development and the Complex Settlement Development. A study of the travel economics involved in choice of residence and work location with a view toward coordinating the direction of the urban transport networks. J. Berényi, I. Pap. HRIS 15. ACTIVE

(16) Traffic Investigations of the District Centers of Budapest. By means of mathematical modelling the study sought out relations between the structural characteristics of the city on one hand and the commerce and communication on the other. L. Makula, I. Pap. HRIS 54. COMPLETE

(17) Adaptation of the TRANSYT/6 Computer Program. The TRANSYT/6 computer program developed by TRRL has been adopted for Hungarian traffic engineering. The program is in practical use. Gy. Pleschinger, Mrs. Lovas. HRIS 54. COMPLETE

(18) Examination of the Unified Parking System of the City. Due to tensions caused by lack of capacity in various parking modes, mathematical modelling is being used to work out divisions of time and space in the various modes. Mrs. Lovas, G. Debreczeni. HRIS 54. ACTIVE

New Projects

7. (19) Search After Network Development and Traffic Organization Methods for the Reduction of the Energy Demand. Comprehensive studies for coordinating road network development, signalization, alteration of labor practices and mass communication to reduce energy demands. P. Hecker, I. Pap, G. Gyulai. HRIS 54. ACTIVE

(20) Search for the Coherence Between the Measurements of Testing Cars and the Cross-Sectional Traffic Census. A study to determine whether State highway vehicles in their regular duties can also be used to analyze speeds and capacities on road sections, which can be expanded to give traffic densities for planning purposes. Mrs. Lovas, Gy. Pleschinger. HRIS 55. ACTIVE

INDIA

Resurvey - 1980

P.C. Bhasin

The 1980 resurvey of road research in India, reported by Mr. P.C. Bhasin, Secretary of the Indian Roads Congress, lists 481 projects, 125 of them for the first time. Of the total, 95 are shown to be complete.

1. COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH: New Delhi 110020

a. Central Road Research Institute: Same address.

(117) Technical Advice, Assistance and Consultancy. Development of a methodology for providing technical advice, assistance and consultancy on special highway design construction and maintenance problems. M.P. Dhir, Roads Division Staff. HRIS 11. ACTIVE

(132) Identification and Location of Laterite and Suitable Moorum through Aerial Photography. To locate locally available road materials for effecting economy in construction costs. R. L. Nanda, J. Chandra. HRIS 61. ACTIVE

(133) Survey of Kankar Deposits by the Application of Air-Photo Interpretation Techniques in Conjunction with Geo-Physical Methods. Evaluate thickness of Kankar hidden in the ground and arrive at quantitative estimate. R. Chary, R. L. Nanda, J. Chandra. HRIS 61. ACTIVE

(134) Evolving Suitable and Economical Specifications for the Construction of Rural Roads. To evolve specifications using locally available materials. Staff. HRIS 33. ACTIVE

(136) Use of C.N.S.L. Derivatives in Road Construction. Investigation into the possible uses in road and runway construction of various derivatives. N. Raghavan, P.K. Dhawan, O.P. Bhatnagar. HRIS 62. COMPLETE

(137) Stabilization of Berms in Black Cotton Soil Areas. To stabilize berms so that traffic can move freely. S. R. Bindra, K. Hussain, P. Oli. HRIS 62. COMPLETE

(138) Studies on Improvement of Micacceous Soils. To evolve a method of determining mica in soils and a technique for stabilization. S.R. Bindra, H. S. Mehta. HRIS 62. COMPLETE

(139) Studies on the Stabilization of Marine Clays for Solar Salt Works. To increase production of salt by mechanization. P. K. Dhawan, B.D. Saha. HRIS 62. COMPLETE

(140) Effect of Impurities in Lime on the Strength Characteristics of Lime-Soil Mixtures. To determine optimum requirements and concentration of lime for soil stabilization. P. K. Dhawan, N. K. Bhasin, P. Oli, S. Harjai, K. A. John. HRIS 62. COMPLETE

(141) Evolving Specifications for Degree of Pulverization of Black Cotton Soil with Respect to Lime Stabilization. Determine optimum degree of pulverization from both cost and strength standpoints. B. R. Malhotra, A.V.S.R. Murthy, D. Chandra. HRIS 62. COMPLETE

(142) Study of Clay Shales in Himalayan Regions. Study of the engineering behavior of these shales considered to be heavily over-consolidated clays. T.K. Natarajan, P.J. Rao, S.C. Gupta, and others. HRIS 61. ACTIVE

1. a. (143) Evolving Design Methodology for Using Prestressed Anchors for Prevention of Slides. To improve existing methods of analyzing stability of slopes, accounting for anchor forces. T. K. Natarajan, V. Sreenivasulu. HRIS 63. COMPLETE

(145) Effect of Water Proofing Materials on the Sealing Property of Soils. To use locally available soils for sealing tension cracks. B.R. Malhotra, P. N. Goel. HRIS 62. COMPLETE

(146) Self-Supporting Earth Fills Using Floating Anchorages. To test suitability of systems made up of a combination of prefabricated panels and reinforcements imbedded in soil for retention of earth. T. K. Natarajan, P. J. Rao, O. Yadav. HRIS 63. ACTIVE

(147) Evolving Specifications for the Construction of Roads on Expansive Subgrades such as Black Cotton Soil. To develop suitable specifications for construction on black cotton soils. T. K. Natarajan, P. J. Rao, E. S. Rao, R. Thirumalai. HRIS 33. COMPLETE

(149) Cooperative Tests for Strength Grading of Indian Cements. To develop standards for strength-grading. M. R. Chatterjee and others. HRIS 32. COMPLETE

(152) In-Plant Variation in Quality of Fly Ash. Determine variations in fly ash due to variations in coal quality, power load, method of collection, and identify different end products that could be produced from different fly ash. R. K. Ghosh and others. HRIS 34. COMPLETE

(153) Fly Ash Based Semi-Rigid Pavement Layers. To develop lime-fly ash stabilized soil as sub-base layer using the different soils of India. R. K. Ghosh and others. HRIS 62. COMPLETE

(159) Use of Standard Precast Prestressed Sections for Composite Construction of Small Span Bridges. To standardize these sections for up to 6 meter spans with Indian Roads Congress loading, and study effect of quality of in-situ concrete in composite construction. J.R. Chaudhuri and others. HRIS 25. COMPLETE

(160) Rating of Highway Bridges. Assess maximum safe carrying capacity of existing bridges and find rational method for the rating. P.R. Chaudhury, and others. HRIS 25. ACTIVE

(161) Strengthening of Existing Bridge Superstructures by Post-Tensioning. Study the effect of external cable post-tensioning of reinforced concrete by means of moment rotational characteristics. P.R. Chaudhury, and others. HRIS 25. ACTIVE

(162) Load Deflection Characteristics of Well Foundations. Model studies to determine amount of lateral resistance offered by non-cohesive soil around the well. P.R. Chaudhury and others. HRIS 63. COMPLETE

(163) Determination of Earth Pressure Distribution Behind Abutments Under Live Load Surcharge. To evolve a rational design procedure for surcharge for different classes of live load. P. R. Chaudhury, A. K. Garg, R.N. Sharma. HRIS 63. COMPLETE

(164) Development of New Structural Pavement Systems. Develop new systems for special situations and carry out trials for techno-economic feasibility. M. P. Dhir and others. HRIS 24. ACTIVE

(165) Dynamic Testing of Pavements. Explore use of surface wave propagation equipment as a non-destructive technique for pavement evaluation. M. P. Dhir and others. HRIS 24. ACTIVE

1. a. (167) Studies on Granular Base Courses. To study various aspects of WBM specifications with a view to bringing about improvements. M.P. Dhir, P.K. Nanda, C.L. Handa, I. Sain. HRIS 62. ACTIVE

(168) Regions of Heavy Rainfall. More effective identification and solution of road problems in heavy rainfall areas. M.P. Dhir, A.K. Chabra, M. R. Arora. HRIS 22. ACTIVE

(169) Studies on Animal-Drawn Carts. Review of existing designs and usage for possible improvements. M. P. Dhir, S. S. Rup, J. Mitter, B. D. Ved. HRIS 53. ACTIVE

(170) Lateral Placement of Vehicles. To develop data on lateral placement of vehicles on roads under different conditions so that geometric and structural aspects of highway can be put on a more rational footing. M. P. Dhir and others. HRIS 21. ACTIVE

(171) Economics of Highway Pavement Design. To develop design and cost tables and methodology for comparison of initial and long-term costs of different designs. M. P. Dhir, N. B. Lal. HRIS 24. COMPLETE

(172) Surface Characteristics of Pavements (Skid Resistance). To develop data on skid resistance obtained with different types of surfaces and conditions. M. P. Dhir, A. K. Bose, J. Mitter. HRIS 24. ACTIVE

(173) Development of Manual Aids. Development of an adjustable template for cross-profiling multi-lane pavements. M. P. Dhir, S. S. Rup, J. Mitter, P. C. Verghese. HRIS 21. ACTIVE

(174) Non-Destructive Method of Measuring Density. To develop a rapid, simple, accurate and non-destructive density measurement method for field use. P. S. K. M. Rao, G. K. Vij. HRIS 34. ACTIVE

(175) Development and Performance Study of a Dynamic Displacement Transducer. Study of a guage for measuring movements in various layers of a pavement due to passage of vehicles. P.S.K.M. Rao, G.K. Vij. HRIS 24. ACTIVE

(176) Development of Micro-wave Heating for Moisture Content Determination of Soil Samples. To develop rapid, accurate method for drying soil samples. P.S.K.M. Rao, G. K. Vij. HRIS 64. COMPLETE

(177) Operations Research in Highway Engineering. To achieve optimum utilization of men, materials and other resources in construction as well as research. Y. Gokhale, G. Prakash, J.V. Chatrapathi. HRIS 33. ACTIVE

(178) Cost of Road Accidents. To assess costs of different types of accidents. D. V. Hingorani, B.M. Sharma. HRIS 51. COMPLETE

(179) Scientific Analysis of Accident Data. Study nature, characteristics and causes of urban accidents and suggest remedial measures. D.V. Hingorani. HRIS 51. ACTIVE

(180) Study on Driver's Behavior. Evaluation of screening tests for drivers and establish minimum requirements for safe driving potential. S.K. Balla, S. M. Lal. HRIS 52. COMPLETE

(182) Traffic Signals for Mixed Traffic Conditions. Study effectiveness of traffic signals at intersections and circles, considering capacity, semi-actuated and fully activated controls, and synchronization. N.S. Srinivasan and others. HRIS 54. ACTIVE

INDIA (contd)

1. a. (183) Road Sign Standards, Letter Size and Comparative Performance. Establish standards, design alphabets, and compare performance of different designs and materials, K. Lal, H. R. Liuthra. HRIS 54. COMPLETE

(184) Development of an Accelerated Laboratory Test on Durability of Road Marking Paints. Correlation of actual performance and accelerated laboratory tests, Shrafuddin, S. B. Sitapathi Rao. HRIS 34. COMPLETE

(185) Evaluation of Benefits Due to Medians. Assess precise role of medians under mixed traffic conditions and determine how different vehicle categories incluence efficiency of traffic flow. P.S. Shetty, S. B. Sitapathi Rao. HRIS 55. COMPLETE

(186) Study of Road User Cost. Determine cost according to type of road surface, surface conditions, geometrics and traffic composition and volume. K. Chand, N.S. Srinivasan, S. B. Sripathi Rao, P. V. Kulkarni. HRIS 16. ACTIVE

(187) Impact of Increase in Price of Fuel on Utilization of Motor Vehicles. To study impact of fuel crisis on road transport economy of the country and on different types of users in Delhi. H. C. Goel, S.M. Lal. HRIS 16. COMPLETE

(190) Traffic Flow Characteristics on Urban Roads. Develop daily volumes based on short counts and analyze such characteristics as hourly and daily variations. A. C. Sarna, S. K. Malhotra. HRIS 55. ACTIVE

New Projects

(193) Anti-Oxidants to Improve the Weathering Characteristics of Bituminous Binders. The oxidation of bitumen in service may be retarded by the addition of certain chemicals. S. V. Ratnam, Jogendra Pal. HRIS 31. ACTIVE

(194) Effect of Soil Salts and Stripping of Bituminous Mixes. To develop a laboratory procedure to determine stripping resistance of aggregates in the presence of water under simulated traffic conditions. A. Kumar, R. Shukla, V. Jaitly. HRIS 35. ACTIVE

(195) Development of a Method to Test the Efficacy of Anti-stripping Agents. To develop a process by which stripping could be induced on any aggregate to facilitate the testing of the efficacy of anti-stripping agents. A. Kumar, R. Shukla, V. Jaitly. HRIS 35. ACTIVE

(196) Effect of Fibrous Fillers on Strength of Bituminous Mixtures. The addition of fibrous materials such as asbestos, glass fibre, thin steel wires, etc. into bituminous mixtures have been found to reduce the cracking on asphalt pavements and to increase their durability. S. Ratnam, D. Goel. HRIS 31. ACTIVE

(197) Study of the Deformation Characteristics in Bituminous Mixes. The stress distribution in asphalt layers may influence permanent deformations and as such can modify the behavior of the bituminous surface (s). A. Kumar, S. Bose. HRIS 31. ACTIVE

(198) Development of Cationic Bitumen Emulsions for Roads. To evolve suitable bitumen emulsions and to expand their uses. R. Shukla, P. Jain, A. Kumar. HRIS 31. ACTIVE

(199) Rejuvenation of Distressed Bituminous Pavements. To develop means for scarifying the pavement and then applying maltene emulsions to those surfaces. A. Kumar, R. Shukla. HRIS 40. ACTIVE

1. a. (200) In-situ Fibreglass Treatment for Waterproofing and damp proofing. The development of a technique for damp proofing and for waterproofing material in place. R. Shukla, A. Kumar. HRIS 34. ACTIVE

(201) Choice of Binder for Different Climatic Zones. To lay test-tracks in five distinct climatic zones using five different grades of bitumen. R. Shukla, P. Jain, A. Kumar. HRIS 31. ACTIVE

(202) Development of Methods such as Bankelman Beam Deflection Method for Evaluation of Structural Capacity of Existing Flexible Pavements. To develop the method for evaluating the structural capacity of existing flexible pavements and for estimating and for the design of overlays to strengthen wear pavements. D. Phadnavis, S. Ratnam. HRIS 24. ACTIVE

(203) Criteria for the Choice of the Type of Bituminous Surface Courses for Flexible Pavements. To develop criteria for selecting the needed bituminous surface course to meet differing geological, climatic and traffic conditions. A. Kumar, R. Shukla, B. Prashar, I. Arya, V. Jaitly, Anil Kumar, Sunil Bose, N. Vermani, D. Goel. HRIS 24. ACTIVE

(204) Development of Improved Form of Expansion Joint Suitable for Conditions in India. Expansion joint assemblies on existing bridges usually do not function properly. P. Chaudhuri, A. Garg. HRIS 25. ACTIVE

(205) Off Road Tests Project. Planning and Implementation of proposed off roads test program to be taken up. M. Dhir, P. Nanda, D. Mukherjee. HRIS 33. ACTIVE

(206) Design, Development and Fabrication of Indigenous Aggregate Spreaders of Various Types and Specifications. Proposed to spread the aggregate evenly on the future line of roads to be constructed. C. Swaminathan, S. Basu, N. Shah, S. Rup. HRIS 33. ACTIVE

(207) Design, Development and Fabrication of Indigenous Bitumen Pressure Distributor. Manually laid bituminous surface dressing may last for three to five years while a machine-laid construction may serve for six to ten years under similar conditions. C. Swaminathan, S. Rup, S. Basu, N. Shah. HRIS 41. ACTIVE

(208) Design, Development and Fabrication of Indigenous Equipment, Manual Aid, Gadgets, etc. for the Rural Roads Construction. To develop suitable equipment to improve quality and effect the economy of construction on rural roads. HRIS 41. ACTIVE

(209) Survey of Road Research Work Done in India During the Last 15-Years. To point out trends followed and indications for future work. Y. Gokhale, G. Prakash, N. Raghavan, J. Chatrapathi. HRIS 12. ACTIVE

(210) Urban Travel Demand Forecasting Relevant to the Indian Context. A critical review of urban travel forecasting methods. A. Sarna, B. Suri, D. Dayal, N. Mittal. HRIS 13. ACTIVE

(211) Parking Demand of Different Land Use. To develop a parking policy for central areas. Jagindra Lal. HRIS 54. ACTIVE

(212) Some Psychological Aspects of Road Safety. To identify the accident potential of pedestrians, of drivers and to suggest safety measures. G. Roy. HRIS 52. ACTIVE

(213) Planning Road System for Bombay Metropolitan Region. To formulate a major road network system for the Bombay Metropolitan Region. I. C. Agrawal and others. HRIS 12. ACTIVE

1. a. (214) Rigid and Semi-rigid Materials, Mixes and Quality Control. Cement saving techniques, corrosion of reinforcement embedded in concrete, monomer and polymer admixed concrete, sulphate resistance of concrete. R. Ghosh, M. Chatterjee, K. Sethi, C. Pant, M. Bhatia, R. Bhatnagar, V. Arora. HRIS 32. ACTIVE

(215) Evaluation, Maintenance, Repairs and Strengthening of Rigid and Composite Pavements including Development of Manual Aid Devices. Studies for improvements in strength evaluation of pavements and in more acceptable methods of repairs to concrete roads and airfield pavements. R. Ghosh, O. Pant, S. Seehra, H. Singh, O. Aggarwal, G. Tike. HRIS 32. ACTIVE

(216) Role of Pavement Construction and Performance on Total Transportation Costs. (Pavement performance and road costs study in India.) A study to establish comparative performances of pavement designs, typical overlay designs, selected machine-laid pavement costs, costs under different typical specifications and total construction and maintenance costs - total duration of project to be 10-years. R. Ghosh, M. Dinakaran, O. Agarwal. HRIS 24. ACTIVE

(217) Minimal Maintenance Rigid and Semi-rigid Pavements for Rural Roads. Specifications and study of comparative economics. R. Ghosh, K. Sethi, O. Agarwal, V. Arora, P. Goel. HRIS 40. ACTIVE

(218) Effect of Increasing Thickness on E Dynamic Values. To compare E Dynamic values of different granular layers and to study the effect of increasing thickness of granular layer on E Dynamic values. D. Phadnavis, P. Rao, A. Ram, Vij. HRIS 24. ACTIVE

(219) Performance Evaluation of Different Types of Subbases, Bases and Surfacings under Simulated Traffic Conditions (Installation of Equipment of Test Track). To study the behavior of various specifications under varying traffic conditions. A. Kumar, S. Bose. HRIS 24. ACTIVE

(220) A Study on Resilience Properties of Different Subgrade Soil Types. To study the resilience and permanent deformation characteristics of different sub-grade soils. D. Phadnavis. HRIS 64. ACTIVE

(221) Prediction of Pavement Performance from Laboratory Tests and its Comparison with Actual Field Performance. To carry out tests in the laboratory on different materials to be used in the road construction. D. Phadnavis. HRIS 63. ACTIVE

(222) Use of Sulphur in Bituminous Mixtures. Sulphur, a by product obtained in refining petroleum oils, is piling up, and its use in road pavement is proposed. A. Kumar, R. Shukla, M. Chand. HRIS 31. ACTIVE

(223) Design Procedure for Rolled Asphalt and Allied Bituminous Mixes. During the design of asphaltic concrete mixes, it has been noted that with the available aggregates hardly one grading could be blended, leaving the designer little choice to change the grading in case the design criterion is not met with. A. Kumar, R. Shukla, N. Vermani. HRIS 31. ACTIVE

(224) Extension of Marshall Method for Designing the Semi-dense and Open Graded Bituminous Mixes. It is proposed to extend the Marshall Method of design to semi-dense and to open graded mixes and at the same time to stipulate a design criterion for these mixes. A. Kumar, R. Shukla, B. Prashar. HRIS 31. ACTIVE

1. a. (225) Use of Polymeric Compounds as Stabilizers for Soil/Gravel. To find out the efficacy of different types of resinous materials in the areas of soil stabilization, and soil erosion control. J. Tandon, N. Krishan. HRIS 62. ACTIVE

(226) A Systems Approach to Solving the Problem of Planning of Rural Roads using Aerial Photographs. To provide an economical, rapid and accurate method of planning a network of rural roads. N. Lal, Ashok Kumar, J. Chandra. HRIS 61. ACTIVE

(227) Development of a Computer Method for Estimating Earthwork for Road Projects using Aerial Photographs. To provide a more economical, reliable and quick method of earthwork calculations. A. Kumar, J. Chandra. HRIS 61. ACTIVE

(228) Route Location by the use of Aerial Photographs in Plain Areas. To conduct reconnaisance survey expeditiously by using aerial photographs to choose the most suitable route(s) among several alternatives which seem feasible. R. Nanda. HRIS 61. ACTIVE

(229) Studies of Intrinsic Properties of Soil for Evaluation of Strength. To develop a simple and suitable test for evaluating for pavement design purposes the strength of subgrade soils. S. Bindra, H. Mehta. HRIS 64. ACTIVE

(230) Study on the Distribution of Stabilizer Content Using Different Mixing Techniques in Stabilized Soil Road Construction. To determine the efficiencies of different methods of mixing and to lay down acceptance criteria for uniformity. N. Bhasin, K. Hussain, N. Goswami. HRIS 64. ACTIVE

(231) Development of Techniques for the Construction of Low-cost Drains and Cross-drainage Works for Rural Roads. To evolve techniques for construction of low-cost drains using stabilized soil and economical materials and designs for cross-drainage works for rural roads. O. Wason, K. Hussain, O. Bhatnagar. HRIS 22. ACTIVE

(232) Strength and Flexibility Characteristics of Stabilized Soils. To prepare guidelines for flexible pavement design based on flexural strength and unconfined compressive strength of the pavement layers. T. Natarajan, N. Lal, B. Saha, P. Dhawan. HRIS 64. ACTIVE

(233) Development of Testing Technique for the Determination of Vertical and Lateral Swell Pressures in Expansive Soils Under Varying Degrees of Lateral Confinement. To develop suitable apparatus for determining vertical and lateral swell pressures under differing lateral confinement. N. Lal, R. Palit, P. Dhwan, P. Oli, R. Mathur. HRIS 64. ACTIVE

(234) Studies of the Mechanism of Plastic Flow in Soft Saturated Clays. Some field trials completed with respect to the evaluation of the relative advantages between the vertical sand drains and the sandwicks for the purposes of strength gain in soft marine clays highlight the high degree of plastic flow that occurred in such clays under massive loadings prior to reaching the stage of ultimate failure. T. Natarajan, E. Rao, J. Bhagawan. HRIS 63. ACTIVE

(235) Use of Synthetic Fabrics in the Construction of Pavement on Low Bearing Soils of India. These products are permeable now-woven fabric membranes which keep apart different layers of materials, yet freely allow the passage of water while restricting the movement of solids, and thus favorably alter the stress-strain behavior of the soil system in which they are included. T. Natarajan, A. Murty, B. Malhotra, D. Chandra. HRIS 63. ACTIVE

1. a. (236) Studies on the Stability of Rock Falls. To study the mechanism of rock falls so as to be able to predict rock slope failure. E. Rao, O. Mascarenhas. HRIS 63. ACTIVE

(237) Influence of Anisotropy in Compacted Clay Fills as Applicable to the Stability Analysis of Slopes. To study the range of deviation in shear strength in cohesive soils due to anisotropy and to evaluate the need for introducing this aspect in the stability analysis of slopes. E. Rao, K. John, J. Bhagwan. HRIS 64. ACTIVE

(238) Development of Foundation Instrumentation. To develop new instruments or to improve the existing ones which normally are used to monitor slope behavior against a landslide or against failure of an embankment. T. Matarajan, B. Malhotra, K. Singh. HRIS 62. ACTIVE

(239) (a) Effect of Leaching on Soil Lime Mix, and (b) Distribution of Lime in the Admixed Samples After Leaching Has Taken Place. Lime treated subgrades may lose a part of lime by way of leaching due to heavy rain falls or by reason of presence of a high water table. T. Natarajan, B. Malhotra, D. Chandra. HRIS 64. ACTIVE

(240) The Use of Lime Slurry Injection Technique to Improve the Stability of Structures Founded on Weak Soils. To develop equipment to inject lime slurry into deep bore-holes and to study the improvement in strength and stability achieved by the lime slurry injection. P. Rao. HRIS 64. ACTIVE

(241) Factors Influencing Modulus of Elasticity of Dry Sand. Further studies toward developing a more comprehensive chart relating to 'E' with various confining pressure at different intermediate values of relative density is required. T. Natarajan, D. Tolia. HRIS 64. ACTIVE

(242) The Strength Characteristics of Micaceous Soils. These soils behave purely, neither as cohesive soils nor as noncohesive soils, making it necessary to go thru a detailed study of the properties of such soils before understanding them thoroughly. A. Murty, D. Tolia, D. Chandra. HRIS 64. ACTIVE

(243) Rigid and Composite Pavements Design and Economics. Satisfy fatigue and servicability requirements, develop rational load factors and provide highway or airfield drainage systems as required. R. Ghosh, Y. Phull, M. Dinakaran, H. Singh, S. Vijayarahavan, K. Bhalla. HRIS 24. ACTIVE

(244) Development of Special Rigid Pavement Systems. Development of (1) precast block pavements, (2) continuously reinforced concrete pavement with elastic joints and of (3) fibre-reinforced concrete pavements. R. Ghosh, M. Dinakaran, M. Chatterjee, S. Seehra, S. Vijayaraghavan, B. Basist, R. Prakash. HRIS 24. ACTIVE

b. Central Building Research Institute: Roorkee, Uttar Pradesh

(11) Lateral Resistance of Piles. To study the load/deflection characteristics of vertical piles subjected to combined vertical and lateral loads, and to establish a correlation with soil properties. S.P. Srivastava. HRIS 25. ACTIVE

(12) Land Use Patterns and Physical Planning. To provide data on land use patterns for cities and determine land use patterns for urban renewal and redevelopment together with an evolvement of layout patterns for the optimum use of the cities' infrastructures and amenities. A. Deb. HRIS 15. ACTIVE

1. b. (14) Sulphate Resistance of Concrete. To reduce the permeability of concrete and to improve the sulphate resistance by use of water reducing admixtures. C. A. Taneja. HRIS 32. ACTIVE

(16) Design and Development in Pile Foundations. To provide design and technical assistance to various projects using pile foundations in different soil conditions for various types of structures. G. S. Jain, D. Sharma. HRIS 33. ACTIVE

(23) Piles Under Reversible Lateral Loads. To study the effects of reversible load cycles on the soil-pile system in terms of deflections, damping and relative stiffness. D. Sharma. HRIS 62. ACTIVE

(24) Pull Out Resistance of Piles under Static Loads. To arrive at a rational method of design of pile foundations based on analytical and experimental studies. B. G. Rao. HRIS 62. ACTIVE

(25) Installation Problem of Soil Pressure Cells. To evolve an optimum and economical procedure for embedment, recording and extraction of these cells. S. Venkatean. HRIS 62. ACTIVE

(26) Standardization of Field Shear Test. To standardize the procedure in relation to the size and normal load that should be used in the test. D. R. Narhari, B. G. Rao. HRIS 63. ACTIVE

(27) Development of Standpipe and Twin Tube Type Piezometers and the Associated Gadgets. To design and fabricate these devices for pore pressure measurement in soils. R. K. Bhandari, V. Sreenivasulu. HRIS 63. ACTIVE

(28) Bearing Capacity of Two Layered System Accounting for Strength Variation with Depth and Direction. To evolve a method of analysis of bearing capacity of layered soils, with solution to be programmed on a computer. V. Sreenivasulu. HRIS 63. ACTIVE

New Projects

(31) Rational Design and Analysis of Raft Foundation. Extensive Usage of the Computer Programs on Analysis of Raft Super Structure - Soil Interaction Program. B. Ram, R. Bhandari. HRIS 64. ACTIVE

(32) Variations of Soil Suction, Moisture and Ground Movements in Black Cotton Areas. To study the seasonal behavior of black soils by monitoring suction, moisture and ground movements. R. Bhandari, S. Gupta, R. Goel, M. Verma. HRIS 64. ACTIVE

(33) Comparison of Deformation Moduli from Field and Laboratory Tests. To measure and compare the moduli of deformation from triaxial tests, consolidation test and sub-soil deformeter tests. D. Narhari, S. Venkatesan, P. Rastogi. HRIS 64. ACTIVE

(34) Foundation Problems in Vizag Dockyard. To investigate the reason for foundation failure and to study the effect of negative skin friction by full scale experiment on piles. D. Mohan, R. Bhandari, M. Soneja, S. Sharma. HRIS 63. ACTIVE

(35) Critical Evaluation of Sampling Practices in Silts and Clays. To critically evaluate soil sampling practices in India and abroad, and to standardize the sampling practices suitable for Indian conditions. R. Bhandari, M. Jain. HRIS 64. ACTIVE

(36) Load Carrying Capacity of Different Shapes of Diaphragm Wall Elements. To develop simple technique of constructing different load bearing diaphragm wall elements in the field and to evaluate their load carrying capacities in Roorkee soils. R. Makol, R. Bhandari. HRIS 33. ACTIVE

1. b. (37) Soil Map of Delhi. To advise on the design and application of skirted granular pile foundations and retrievable foundations. V. Aggarwal, G. Balodi. HRIS 61. ACTIVE

(38) Application of Skirted Foundations. Design and development part has been completed and this study envisages to lay stress of the application part. D. Mohan, R. Bhandari, B. Rao. HRIS 33. ACTIVE

(39) Development of Vibrating - Wire Earth Pressure Cell. To design, fabricate and evaluate the performance of a vibrating wire type earth pressure cell. R. Bhandari, P. Srivastava, Y. Pandye. HRIS 64. ACTIVE

(40) Development of Digging Tools for the Construction of Diaphragm Walls in Hard Soils. To develop simple hydraulic cutters for digging the hard soils for the construction of diaphragm walls in dense sands, stiff clays and soft rock. R. Makol, R. Bhandari, M. Goel, L. Jain. HRIS 41. COMPLETE

c. Structural Engineering Research Centre: Roorke, Uttar Pradesh

(11) Design Tables for Bridge Decks. To prepare design tables of critical moments for deck slabs with different boundary conditions. M.G. Tamhankar, M. S. Kapla, D.S. Prasada Rao. HRIS 25. COMPLETE

(12) Field Survey of Intensity and Frequency of Live Loads on Road Bridges. A study of traffic on bridges as an aid in the designing of partially prestressed concrete bridges. M. G. Tamhankar. HRIS 25. COMPLETE

(19) Design of Web Reinforcement in Partially Prestressed Concrete Beams. To determine the minimum amount of web reinforcement necessary to avoid shear failure in a partially prestressed beam. N.S. Bhal, K.C. Naithani, A. D. Gadh. HRIS 25. COMPLETE

3. MINISTRY OF RAILWAYS: Almbagh, Lucknow 5, Uttar Pradesh

a. Research, Designs and Standards Organization: Same address.

(1) Stabilization of Embankments Built in Silty Clay. To stabilize silty clay slopes on approach banks to River Ganga by introducing 3-meter wide beams or providing concrete encased rail piles driven into original ground through the slopes. Research staff. HRIS 62. COMPLETE

New Projects

(7) Studies on the Stabilization of Formation by Lime Slurry Pressure Injection Technique. To recommend scheme of soil exploration to identify banks susceptible to such treatments, to specify the treatments, to design the requisite equipment and to specify the mechanized equipment for use in major work. Research Staff. HRIS 63. ACTIVE

(8) Rehabilitation of Existing Railway Formation with Cationic Bitumen Emulsion. To study the effectiveness of treatment of bad formation and if effective outline criteria and prepare specification for work. Research Staff. HRIS 63. ACTIVE

(9) Stabilization of Formation by Pressure Grouting of Ballast Pockets with Cement/Sand Mixtures. Lay down criteria, recommend schemes for pocket exploration,work up economics, draw up specifications and recommend method of testing research staff. HRIS 64. ACTIVE

(10) Study of the Behavior of High Fill Over Deep Clayey Strata of Very Low Shear Strength and High Compressability. Compare the theoretical values with actual values of parameters such as pore pressure, settlement etc. during construction and after completion. Research Staff. HRIS 64. ACTIVE

5. HIGHWAYS AND RURAL WORKS DEPARTMENT, GOVERNMENT OF TAMIL NADU: Madras - 600025

a. Highways Research Station: P.B. 2371, Guindy, Madras - 600025

(30) Skidding Resistance of Different Road Surfaces in Relation to Local Conditions of Road, Traffic and Climate. Skid measurements at accident locations and on typical surfacings to develop recommendations for improving skidding resistance. Research Staff. HRIS 24. ACTIVE

(44) Surface Enrichment Treatment. To test performance of slurry seal mixes with sea sand, fly-ash and chemicals for improvement of riding quality of black top surfacing. HRIS 31. ACTIVE

(55) Partially Prestressed Concrete Beams. Characteristics of partially prestressed concrete beams are compared to those of fully prestressed and regular reinforced concrete beams. Research Staff. HRIS 25. ACTIVE

(64) Substitutes for Bituminous Binders. Observations to determine performance characteristics of test sections using cashew oil as a binder instead of bitumen. Research Staff. HRIS 34. ACTIVE

(66) Swell and Permeability Characteristics of Bituminous Mixes. Investigations of swell and permeability characteristics of different types of bituminous mixes using various fillers. Research Staff. HRIS 31. ACTIVE

(75) Assurance of Quality in the Manufacture and Laying of Bituminous Materials. Field control during manufacture, laying and design of bituminous mixes to assure quality. Research Staff. HRIS 31. ACTIVE

(84) Trapezoidal Grids - Model Studies. Model tests of curved trapezoidal bridge decks in a study of the load distribution between the girders for different spacing and number of grids in order to formulate suitable design methods. Research Staff. HRIS 25. COMPLETE

(87) Precast Culverts. To study and suggest suitable methods of precast construction of culverts for adoptions in a massive reconstruction program. Structures Lab Staff. HRIS 33. ACTIVE

(92) Capacity Studies on Urban Roads. Assessment of the practical traffic capacity in relation to speed and volume in order to formulate standards for lane width and desired speed in urban areas. Research Staff. HRIS 55. COMPLETE

(100) Determination of Field C.B.R. In-Situ and Correlation with Laboratory Values. To correlate these two determinations, with the object of eliminating one or the other. Research Staff. HRIS 62. COMPLETE

(101) Penetration "N" Values Using Curves and Correlation With "N" Values of S.P.T. To correlate standard laboratory penetration tests on sands with different densities and over-burden pressures with penetration curves evolved by Terzhagi and others. Research Staff. HRIS 62. COMPLETE

(102) A Study of Soil Compaction on Different Types of Soils Using Different Types of Rollers. To determine the suitability of different types of rollers on various soils and pavement layers. Research Staff. HRIS 62. COMPLETE

(103) Fibre Reinforced Concrete. To study the use of various fibre materials and their effect on the properties of concrete. Research Staff. HRIS 32. COMPLETE

(104) Providing Hard Shoulders for Pavements; Design and Materials. Analysis of the design requirements for unpaved and paved shoulders and the influence of such shoulders on construction procedures adopted. Research Staff. HRIS 24. ACTIVE

5. a. (139) Development of Construction Technology Utilizing Optimum Manual Labor and Mechanical Equipment for Laying Soil Stabilized Works. To develop an appropriate construction technology for this type of work. HRIS 33. ACTIVE

(140) Study of Various Techniques for Concrete. To study low cost road building techniques that would avoid costly aggregate by experimenting with concrete using lime-burnt clay pozzolana, lime-flyash, cement-flyash, and lean cement-flyash for stabilizing locally available materials. HRIS 62. COMPLETE

(141) Study of the Use of Special Cements in Highway Structures. To study the use of low C_3A cement to prevent disintegration of concrete due to sulphate attack, as well as a special cement with property of high early strength as compared to ordinary portland cement. HRIS 32. ACTIVE

(142) Study on Expansion Joints in Road Bridges. Study of existing condition of expansion joints and develop suitable alterations and improvements to the joints as well as the filler materials and sealants. HRIS 34. ACTIVE

(143) Manufacturing a Test Vehicle for Conducting Load Tests on Bridges. To manufacture a test vehicle of 120 ton capacity. HRIS 25. ACTIVE

(144) Study of Equivalency Factors. To study different types of pavement surfaces and evolve the equivalency factors for the different types of mixes. HRIS 24. ACTIVE

(145) Built Up Spray Grout. To determine the performance of a surface laid using this spray technique to arrive at equivalency factors of the layers as compared with conventional pavement layers. HRIS 24. ACTIVE

(146) Assessment of Pavement Serviceability Index. To determine the indices for different pavement conditions so that norms may be fixed for remaining service lives. HRIS 24. ACTIVE

(151) Driver Reaction Time Study. To conduct studies on reaction using drivers testing apparatus. Traffic Laboratory. HRIS 52. COMPLETE

(152) Study of Horizontal Curvature on Roads using Ball Bank Indicator. To determine if horizontal curves provided are safe for the speed for which they are designed. Traffic Laboratory. HRIS 21. ACTIVE

(153) Choice of Types of Surface for Different Works. To study the suitable and economic type of surfaces for various types of construction, different materials and specifications. Bitumen Laboratory. HRIS 24. ACTIVE

(154) Development of Methods such as Benkelman Beam Deflection Method for Evaluating Structural Capacity of Existing Flexible Pavements. To develop charts showing tolerable deflections, the amount of overlay needed to reduce deflections to proper amount, and develop estimating method for residual life of existing pavements. Research Staff. HRIS 24. ACTIVE

(156) Dynamic Response of Bridge Structures under Moving Load. A study of the impact effect of different moving loads with different speeds. Structures Laboratory. HRIS 25. ACTIVE

(158) Development of Specifications for the Construction of Roads in Expansive Clay Areas. Study of expansive clays to determine causes of failure, prepare specifications for subbases in black cotton soil and evolve methods of protection against slaking, dessication and erosion of slopes. Research Staff. HRIS 33. ACTIVE

5. a. (161) Study of Road Marking with Plastic Studs. To study placing of plastic studs with different stroke lengths and gaps. Traffic Laboratory. HRIS 34. COMPLETE

(163) Speed Study. To determine spot speed of vehicles at Ulundurpet. Traffic Laboratory. HRIS 55. COMPLETE

(164) Evaluation of Subsurface Strata from Electrical Resistivity Data. To correlate the electrical resistivity data with other physical properties of soils and rocks. Research Staff. HRIS 61. ACTIVE

(167) Studies on Critical Moisture Content for the Evaluation of Subgrade Strength for Pavements under Different Conditions. To predict the highest moisture content and likely lowest strength and assess the effect of variations in moisture that may occur. Research Staff. HRIS 63. ACTIVE

(169) Determination of Riding Quality by Bump Integrator. To assess the riding quality of National Highways with this device and fix priorities for improvements. Traffic Laboratory. HRIS 24. ACTIVE

(170) Study on Emulsions. To prepare anionic and cationic bituminous emulsions for patch work and surface dressing works in colder climates. Bitumen Laboratory. HRIS 31. ACTIVE

(171) Steam Curing of Concrete. A study of various factors such as age of concrete before subjecting it to steaming, steaming temperature, duration of steaming, and the comparative effect of steaming and normal curing. Concrete Laboratory. HRIS 32. ACTIVE

(172) Study of the Reliability of Ultrasonic Concrete Tester. To assess its reliability in estimating the strength of concrete. Concrete Laboratory. HRIS 32. COMPLETE

(173) Utilization of Fly Ash for Road Works. A study of the use of locally available fly ash to effect cost reduction and limit the use of costly conventional road building materials from far off places. Soils Laboratory. HRIS 34. ACTIVE

(174) Conducting Research in the Laboratory on Utilization of Fly Ash for Road Works. A laboratory study of the uses of fly ash to reduce costs. Soils Laboratory. HRIS 34. ACTIVE

(175) Corrosion Study. To determine the efficacy of various paints to reduce corrosion of steel in reinforced concrete structures. Concrete Laboratory. HRIS 34. ACTIVE

(176) Survey and Evaluation of Locally Available Materials. A systematic survey and evaluation of locally available materials to provide data as to location and suitability. HRIS 35. ACTIVE

(177) Testing of Aggregates for Road Works. To test and keep records of the properties of road aggregates available and recommend their use for different types of works. Bitumen Laboratory. HRIS 35. ACTIVE

(179) Collection of Accident Statistics. To compile and analyze accident statistics for causes with a view to taking appropriate safety measures. Traffic Laboratory. HRIS 51. ACTIVE

(181) Before and After Study of Pedestrian Subways. To conduct before and after study of these subways to establish their economic benefit. Traffic Laboratory. HRIS 15. ACTIVE

5. a. (182) To Develop Data on the Growth of Traffic in Different Regions for Different Categories of Roads. To determine such factors as hourly and other periodic and seasonal variations in traffic averages, trends in growth, composition and number of axles per commercial vehicle. Traffic Laboratory. HRIS 55. ACTIVE

7. RESEARCH INSTITUTE, PUBLIC WORKS DEPARTMENT, GOVERNMENT OF UTTAR PRADESH: Mahatma Gandhi Marg, Lucknow, U.P.

(19) Lime Fly-Ash Local Sand Mixture as Filler in Water Bound Macadam Roads. Assessment of the suitability and economy of lime fly-ash local sand mixtures as filler for water bound macadam. Research Staff. HRIS 34. ACTIVE

(21) Boggy Action in Roads. Determination of causes, where hard crust had sunk under the subgrade due to boggy action, and the remedial measures to be taken. M. M. D. Seth, L. Chand. HRIS 62. ACTIVE

(22) Petrographic Study of U.P. Stones. A study of the petrographic character of road stones and the correlation with other engineering properties. M. M. D. Seth, L. Chand, R. S. Dixit. HRIS 35. ACTIVE

(24) Study of Flakiness Property of Commonly Available Road Aggregates. Framing of specifications for maximum value of flaky particles for road construction according to availability at main quarries. M. M. D. Seth, L. Chand, R. S. Dixit. HRIS 35. ACTIVE

(29) Study of Landslides in U. P. Assessment of topographical, geological and hydrological features of the area to find causes of failures so that a solution can be worked out. M. M. D. Seth, L. Chand. HRIS 63. ACTIVE

(30) Application of Elastic Theory to the Design of Flexible Pavement. Comparison of measured maximum deflections under axle loads with the calculated values based on elastic theory to arrive at rational design. L. Chand. HRIS 24. ACTIVE

(31) Adhesion Between Bitumen and Aggregate. To study the adhesion characteristics of different road aggregates with bitumen so as to improve this property. L. Chand, G. P. Singh. HRIS 31. ACTIVE

(32) Design Method for Open Graded Bituminous Mixes. To evolve design factors for open graded mixtures by measuring stability values at varying temperatures. L. Chand, G. P. Singh. HRIS 31. ACTIVE

(36) Study of Pavement to Form a Basis for Application of AASHO Test Results to Indian Roads. L. Chand. HRIS 24. ACTIVE

(39) Study of Properties of Full Depth Asphaltic Concrete. Study of such factors as type of bitumen, stones, intensity of compaction, aggregate and binder temperatures on stability values for different gradings. G.P.S. Chauhan, L. Chand. HRIS 31. ACTIVE

(40) Study of Thickness of Sandy Layer of Various Fineness Modulus as Capillary Cut Off to be Interposed for Checking Capillary Rise of Water. Derivation of a suitable formula for determining required thickness. Y. Hasan, J.P. Bhatnagar. HRIS 62. ACTIVE

(41) Comparative Study of Engineering Properties of Soils Using Various Stabilizers. Study use of cheaply and commonly available stabilizers with type of soils generally available in alluvium region of U.P. Y. Hasan, J. P. Bhatnagar. HRIS 62. ACTIVE

7. (42) Suitability of Flyash with White Lime as Stabilizer in Construction of Road Pavements. To determine ways in which soils near thermal power plants may be stabilized with lime and the readily available flyash. K. Singh, R. N. Pathak. HRIS 62. ACTIVE

(43) Study of Spectrum of Axle Loads on Roads in Different Regions. To get a realistic idea of this spectrum so that pavement design can be on a rational basis. S. N. Khanna. HRIS 55. ACTIVE

(44) Evolving an Efficient System for Animal Drawn Vehicles. To develop a design of the bullock cart that will improve speed, reduce tractive effort, and minimize road damage. L. Chand. HRIS 53. ACTIVE

(45) Deflection Studies on Roads in Uttar Pradesh with Benkleman Beam. To measure deflection and rebound values on different categories of roads with different pavement thickness, composition, soil type, traffic, rainfall, etc., so as to provide basic data for a deflection-based design method. L. Chand. HRIS 24. ACTIVE

(46) To Develop Data on the Growth of Highway Traffic in Different Regions for Different Categories of Roads. To determine such factors as hourly and other periodic and seasonal variations in traffic averages, trends in growth, composition and number of axles per commercial vehicle. M. M. Seth. HRIS 55. ACTIVE

8. PUBLIC WORKS (ROADS) DIRECTORATE, GOVERNMENT OF WEST BENGAL: Calcutta

a. Road and Building Research Institute, Pailan, P. O. Rashapunja, 24-Parganas, West Bengal

(11) Performance of Different Types of Bituminous Surfacings. Use of six types of bituminous surfacings on a circular test track with the same type of base and subgrade for testing with a 10,000 lb. wheel applied for 1,000,000 repetitions or until failure occurs. Institute Staff. HRIS 24. ACTIVE

(14) Lime Soil Stabilization. A study of the use of lime to improve medium quality soil for use in subbases, including CBR tests. D.B. Banerjee, M. K. Chatterjee. HRIS 62. ACTIVE

(15) Use of Locally Available Aggregates in Road Construction. Materials survey of all large deposits in West Bengal and a study of their properties to determine suitability for use in pavements. M. K. Chatterjee, A. Mukhopadhyay. HRIS 35. ACTIVE

(20) Determination of Percentage Error in Finding out Moisture Content of Soil by Site Method. To determine the relationship between laboratory and field moisture determinations. A.K. Mukhopadhyay, S. Mukherjee. HRIS 64. ACTIVE

(22) Effect on Workability and Strength of Cement Concrete when Sugar is Used as an Admixture. To determine the minimum amount of sugar added to green concrete that will provide greater workability and still be economical to use. B. Dutt. HRIS 32. ACTIVE

(23) Influence of Prolonged Soaking on Compacted Cohesive Soil. A laboratory study to evaluate adverse effect when this soil is subjected to complete inundation for different periods of time. P. Sen Sharma. HRIS 61. COMPLETE

(24) A Case Study for Redesigning of High Embankment After Failure. To conduct a thorough subsoil investigation and to suggest suitable profile for high approach embankments that will stand safely, and also to formulate the subsoil exploration scheme. S. Mukherjee, S. Chakraborty. HRIS 62. ACTIVE

8. a. (25) Use of Lime-Fly Ash-Soil Stabilization in Subbase. To determine the strength of lime-fly ash-soil admixtures with various proportions of fly ash so as to evolve a suitable specification for effective utilization of this waste material. A. Chowdhury. HRIS 62. ACTIVE

(26) Studies on Moisture Variation and Its Influence on CBR Values Due to Prolonged Soaking of Lime Stabilized Soil with Different Percentages of Lime. To determine the long term effect of the CBR value of soaked lime stabilized soil layer, with varying percentages of lime. P. Sen Sharma. HRIS 62. ACTIVE

(27) Evaluation of Laboratory Correlation Between the Values of CBR and Unconfined Compressive Strength of Cohesive Soil. To determine this correlation in the laboratory, so that it can be used in determining field CBR in actual construction, and reducing time required for the field CBR test. D.K. Bhayyascharyya. HRIS 62. ACTIVE

New Projects

(29) In-Field Study on the Laying of the Experimental Road Sections and their Performances. To record data during laying of different road sections following normal and standard specifications and compare their performances with an uncontrolled section. C. Bose, S. Das Gupta, S. Mukherjee, K. Chatterjee. HRIS 33. ACTIVE

(30) Co-Relation Among the Laboratory C.B.R., In-Situ Field C.B.R. and C.B.R. of Undisturbed Samples of Sub-grade of a Road. To find a standard procedure to assess the value of CBR in the field which should guide and lead to proper designing of a pavement. C. Bose, S. Mukherjee, S. Das Gupta, K. Chatterjee. HRIS 24. ACTIVE

(31) A Practical Co-Relation of Density and CBR of Compacted Earth Work. To establish how far the present method of density checking of a compacted earth work is applicable to assess the actual value of CBR in an experimental field road section. C. Bose, S. Mukherjee, S. Das Gupta, K. Chatterjee. HRIS 62. ACTIVE

9. INDIAN INSTITUTE OF TECHNOLOGY: Haus Khaz, 110029 New Delhi

a. Civil Engineering Department: Same address.

(9) Restrained Reinforced Concrete Columns in Uniaxial and Biaxial Bending. Use of computer programs developed for strength calculations of R. C. long columns under uniaxial and biaxial bending and rotationally restrained at the ends, to conduct numerical experiments for the development of design rules for bridge and building columns. A. K. Basu, P. Suryanarayana. HRIS 25. COMPLETE

(11) Load Distribution in Torsionally Stiff Interconnected Skew Bridge Girders. Preparation of computerized design graphs and charts for various bridge parameters using method of harmonic analysis of interconnected skew bridge girders. C. S. Surana, R. Agrawal, J. Prasad. HRIS 25. ACTIVE

(15) Physico-Chemical Behavior of Delhi Silt as Sub-base/Base Course Material. To determine usability of Delhi silt-lime-fly ash mixtures. G.V. Rao, T. S. Rekhi. HRIS 62. COMPLETE

(17) Strength Characteristics of Stabilized Soils. Evaluation of the strength parameters of stabilized soils under true triaxial conditions for utilization in thickness design methods. T. Ramamurthy, G.V. Rao, C.P. Nag. HRIS 62. ACTIVE

9. a. (18) Stresses in Slabs of Torsionally Stiff Interconnected Skew Girder Bridges. Develop a finite element program with quadrilateral element to study stresses in such slabs. C. S. Surana, C. V. Ramakrishna, R. Swaroop. HRIS 25. ACTIVE

(19) Application of Finite Element Technique to Analysis of Bridge Structures. To develop a finite element program to be coupled with an existing harmonic analysis program so that the analysis of the central region is made by harmonic analysis, while the support region is analyzed by the finite element method. C.S. Surana, C. V. Ramakrishnan, R. Swaroop. HRIS 25. ACTIVE

New Project

(20) Bending Moments in Deck Slabs of Bridges. To develop a method wherein the girder twist and their relative deflections may be incorporated in assessing the bending moments in the slab. C. Surana, R. Swaroop, A. Agrawal, M. Kanodia. HRIS 25. ACTIVE

b. Civil Engineering Department: Kharagpur

(18) Development of Aggregate Gradings for Highway Pavements. To develop procedure for design of aggregate grading based on intrinsic characteristics of gradings. S. K. Rao, R.P. Sharma. HRIS 24. ACTIVE

(19) Benkelman Beam Deflection Studies for Developing Design Procedure for Flexible Overlays. To correlate analytical techniques with the Benkelman Beam deflection studies in determining thickness of overlay material. S. K. Rao. S. C. Singh. HRIS 24. ACTIVE

(21) Balanced Method of Design of Aggregate Gradings for Highway Pavements. Identification of composite and filler aggregate structures and a stage of proportions giving minimum voids for the design of any grading desired. S.K. Rao, R. P. Sharma. HRIS 24. ACTIVE

New Projects

(22) Permanent Deformation in Flexible Pavement. To test subgrade, subbase and base course materials under triaxial repeated load tests to determine the irrecoverable deformation parameters of the materials. Staff. HRIS 24. ACTIVE

(23) Fabrication of an Electronic Weigh Bridge. To assemble metal sheets interposed with compressible dielectric material to form a compacitance which will reduce in thickness when passed over by a wheel and will reflect axle loads. Staff. HRIS 41. ACTIVE

c. Department of Civil Engineering: Madras-600036

(9) Analysis for the Estimation of Lateral Deformation of Well Foundations. Develop a rational analysis using finite element method. K.S. Sankaran, K. Muthkrisnaiah. HRIS 63. COMPLETE

(10) Evaluation of Subgrade and Its Overlaying Flexible Pavement Layers. To evolve rational design using deflection criteria. K.S. Sankaran, D.R. Rao. HRIS 62. ACTIVE

(11) Lime Stabilization in Expansive Soils and Fabric Study. To overcome difficulties involved with black cotton soils as subgrade and subbase by lime stabilization as well as a fabric. K. S. Sankaran, S.N. Rao. K.V.S. Rao. HRIS 62. ACTIVE

9. b. (13) Rational Approach to Asphalt Concrete Mix Design. The development of a rational design method for asphaltic concrete mix through the simulation of field conditions called the Beam Test Method. D. R. Rao, T. C. Benjamin. HRIS 31. COMPLETE

d. Civil Engineering Department: Kanpur

(2) Simulation Models to Determine the Delay Caused to Motor Vehicles by Slow Moving Traffic. Simulation of the movement of fast and slow moving vehicles with determination of delays for different volume levels, with validation of results by field studies. B.R. Marwah. HRIS 55. ACTIVE

(3) Models for Highway Network Planning. Use of systems approach and operational research techniques in developing the following probabilistic models for the Kanpur region: (1) trip generation and attraction; (2) trip distribution; and (3) network simulation. B.R. Marwah. HRIS 55. ACTIVE

(4) Time Series Models of Vehicular Traffic. Development of time series models for Kanpur region so as to determine the trend, seasonal, periodic and random fluctuations in traffic. B. R. Marwah. HRIS 55. ACTIVE

e. Civil Engineering Department: Powai, Bombay-400076

(6) Static Analysis of Curved Bridge Decks. A static analysis of curved bridge decks using: (1) grid idealization with stiffness matrix method; (2) stiffness matrix method with harmonic analysis; (3) space grid idealization with stiffness matrix method; (4) 3-D finite element idealization with stiffness matrix assembly; and (5) discrete energy method. Research Staff. HRIS 25. ACTIVE

10. JADAVPUR UNIVERSITY; Calcutta 32

a. Civil Engineering Department: Same address.

(9) Negative Skin Friction on Piles. Use of model tests in a study directed toward determining themagnitude and distribution of negative skin friction on piles embedded in soft soils. C.R. Gangopadhyay, N.N. Som. HRIS 25. ACTIVE

(10) Torsion in Bridge Girder. Studies include the following: (1) percentage of torsion taken by girder; (2) effect of stiffness of tension flange against rotation and displacement; (3) influence of flexural rigidity of web; (4) effects of end conditions and geometrical parameters of the girder; and (5) influence of ration of transverse span to longitudinal span for different support conditions. P. K. Som, B. Sengupta, T.K. Roy. HRIS 25. ACTIVE

11. UNIVERSITY OF ROORKEE: Roorkee, U.P.

a. Civil Engineering Department: Same address.

(12) Behavior of Curved Concrete Box Girder Bridges Before Cracking. Analysis of simply supported curved box girders, with or without intermediate diaphragms, for primary and distortional stresses by use of the finite element technique. C.P. Jain, D. N. Trikha. HRIS 25. ACTIVE

(13) Behavior of Concrete Girder Bridge Before and After Cracking. Use of the finite element technique in investigating the behavior of R.C. and post tensioned concrete box girder bridges by analytical and experimental studies, before and after cracking. D. N. Trikha. HRIS 25. ACTIVE

(16) Cable Stayed Bridges. Static and dynamic analysis of cable-stayed concrete and steel bridge superstructures of cellular and open cross-sections and evaluation of structural performance and relative economy. Studies in soil-structure interaction. G. Nayak, Prem Krishana. HRIS 25. ACTIVE

11. a. (27) Simulation Techniques in the Study and Analysis of Traffic Flow. Consideration of the application of simulation techniques in a study and analysis of complex traffic flow problems which are not easily amenable to conventional solutions. S. Khanna, M. Arora, A. K. Gupta. HRIS 55. ACTIVE

(28) Application of Queueing Models in Traffic Engineering. Development of mathematical models for various traffic flow processes using the Queueing Theory, together with evaluation of parameters for various models from field data. S. K. Khanna, M. Arora, A. K. Gupta, Surendra Kumar. HRIS 55. ACTIVE

(30) A Systems Approach to Transportation Planning for Mixed Traffic Plan. A systems approach to bring the entire transportation planning process within an integrated network, together with the development of an approach to incorporate the effect of mixed traffic flow on various elements of transportation planning. S.K. Khanna, A.K. Gupta. HRIS 55. ACTIVE

(31) A Scientific Approach to Accident Analysis for Highway Safety. Development of a scientific approach for analysis of traffic accidents, using mathematical analysis for momentum-kinetic energy concept, and a scientific approach for evaluation of accidents and assistance to traffic authorities. S.K. Khanna, G.K. Agarwal. HRIS 51. ACTIVE

(32) On-Street Parking Controls and Off-Street Parking Facilities. Development of a Systems Approach to evaluate the effect of on-street parking controls and off-street requirements, together with development of mathematical models using the Queueing Theory. S. K. Khanna, A. K. Gupta. HRIS 54. ACTIVE

(34) Characterization of Flexible Pavements with Bituminous Surfacings. To develop a design methodology for flexible pavements with bituminous surfacings taking into consideration the non-linear and time dependent characteristics of the pavement materials. K.R.N.S. Setty, S.K. Khanna, M.G. Arora. HRIS 24. ACTIVE

(35) Study of Traffic Flow Quality on Divided and Undivided Urban Roads. An analysis of traffic flow quality with special reference to safety and speeds for mixed traffic flow. S. K. Khanna and others. HRIS 55. ACTIVE

(36) An Integrated Mass Transportation System Planning on Zonal Basis. To estimate the travel demand for urban-cum-rural areas of a district and to develop integrated regional transportation planning system considering several modes of transport including buses and railway. V. Kumar, S. K. Khanna, M. G. Arora. HRIS 12. ACTIVE

(37) Urban Transport Related to Accessibility and Land Use. To develop a multinominal logit model to predict choice of people for different modes of urban transport, for medium sized cities, and big cities. H.K. Sinha, S. K. Khanna, M. G. Arora. HRIS 15. ACTIVE

New Projects

(38) Design Sensitivity Studies and Optimization of Prestressed Segmental Box Girder Bridge Super-Structure. To study the influence of various parameters on the over-all cost of the structure, to suggest an optimal solution and recommend standardized cross-sections for various spans and longitudinal arrangements. D. Trikha, P. Jain. HRIS 25. ACTIVE

(39) Analysis and Design of Bridge Pier and Well Caps. To evaluate design methods for bridge pier and well caps to bring about greater rationality of design and achieve economy where possible. P. Krishna. HRIS 25. ACTIVE

New Projects

11. a. (40) Development of Methods Such as Benkelman Beam Deflection Method for Evaluation of Existing Flexible Pavements. To develop a methodology and present design charts for rehabilitation of existing flexible pavements. S. Khanna, M. Arora. HRIS 24. ACTIVE

(41) Transportation Modeling for Trunk Route System. To develop a rational methodology for planning of trunk route network in the country. S. Khanna, M. Arora. HRIS 12. ACTIVE

b. School of Research and Training in Earthquake Engineering: Same address.

(9) Seismic Analysis of Simple Span Bridges with Hydraulic Dampers. To develop a simplified method of seismic analysis of simple span bridges with hydraulic dampers at the expansion bearings. A. S. Arya, K. Kumar. HRIS 25. ACTIVE

(10) Seismic Investigation of Second Hoogly Bridge. To determine accelerogram and acceleration spectra for site, compute effects on bridge components and compare experimental and analytical results. Staff. HRIS 63. ACTIVE

(16) Earthquake Resistance of Girder Bridges. To initiate a program to retrofit more vulnerable structures with special devices to absorb energy, isolate the effects of siesmic disturbances, and reduce forces on piers and girders. A. S. Arya, K. Chandra. HRIS 25. ACTIVE

c. Structural Engineering Research Centre, Roorkee; Same address.

(1) Field Survey of Intensity and Frequency of Live Loads on Road Bridge. Study of traffic on bridges as an aid in designing partially prestressed concrete bridges. M. G. Tamhankar, D.S.P. Rao, M.S. Kapla. HRIS 25. COMPLETE

(3) Computer Software Development for Dynamic Analysis of Grids and Stiffened Plates by Finite Element Method. To work out computer programs to lead to design of industrial structures. M.N. Keshava Rao, G.P. Mitra, R.K. Vaish. HRIS 25. COMPLETE

(4) Interaction Analysis of Prestress Losses. To develop accurate method for determining the losses considering the interaction of constituents of the losses. A. S. Prasado Rao. HRIS 25. COMPLETE

(6) Live Load Studies at Hindan Bridge at Ghaziabad. To obtain actual live load moment pattern and spacings on this bridge. M.G. Tamhankar, D.S.P. Rao. HRIS 25. COMPLETE

(7) Rationalization of IRC Bridge Code of Practice. To carry out studies to rationalize code provisions pertaining to loading standards and design of prestressed concrete bridge decks in torsion. D.S.P. Rao, M. G. Tamhankar, M.S. Kapla. HRIS 25. COMPLETE

(8) Analysis and Design of Box Girder Free Cantilever Bridges. To study different structural actions and parametric influences and develop computer program for analyzing design of long span cantilever type prestressed concrete bridges. M.G. Tamhankar, S.B. Agrawal, M. Arumugam, N.V. Raman. HRIS 25. ACTIVE

(9) Experimental Investigations on Elastomeric Bridge Bearings. Study of the implications of using elastomeric bridge bearings and to assess the rotational stiffness of bearing pads of various shapes. J.N. Chauda, M. G. Tamhankar. HRIS 25. ACTIVE

11. c. (10) Studies on the Interaction Behavior of Rectangular Concrete Beams Prestressed to Different Degrees of Prestress, Subjected to a Combined Loading. To formulate design recommendations for prestressed concrete beams for inclusion in the relevant I. S. Codes. A.S. Prasada Rao. HRIS 25. ACTIVE

(11) Probabilistic Studies in Limit State Design of Concrete Structures. To develop probabilistic design criteria for various limit states and evaluation of basic design parameters. V. K. Ghanekar, J.P. Jain, M.K. Mittal. HRIS 25. ACTIVE

New Projects

(12) Development of Computer Software for the Analysis and Design of Multistoried Buildings, Bridges and Storage Structures. To develop a general purpose program by modifying and integrating existing ones for economy and optimization. S. Sharma, B. Goyal, R. Vaish. HRIS 25. ACTIVE

(13) Non-linear Analysis and Design of Cable Suspended Structures with Special Reference to Bridges. Development of capability for the nonlinear analysis involving large deformations and material nonlinearities, especially those of cables. G. Kumar. HRIS 25. ACTIVE

(14) Development of Computer Software for the Analysis and Design of Medium Span Prestressed Concrete Highway Bridges. To develop computer programs for the integrated analysis and design of composite I-girder bridges. M. Kapla, M. Tamhankar. HRIS 25. ACTIVE

(15) Development of Transducers and Allied Measuring Equipment. To develop transducers required for instrumentation in laboratory and field investigations. B. Goyal, S. Sharma, S. Khanduja, B. Tripathi. HRIS 25. ACTIVE

d. Highway and Traffic Engineering Division: Same address

(3) Flexible Pavement Evaluation by Deflection Criteria. Four phase study of pavement deflections to develop transfer function. P. D. Marathe, S. K. Khanna. HRIS 24. ACTIVE

(4) Shrinkage Characteristics of Soil Cement Base Courses. Mineralogical, crystallographic explanations of shrinkage mechanism along with evaluation of various parameters. R. B. Lal Bedi, P. N. Godbole, S. K. Khanna. HRIS 62. ACTIVE

(5) Operational Analysis of Urban Bus Transportation System. To develop a simulation model to represent urban bus transportation on Indian city streets so as to formulate new schedules to improve service. P.S. Mony, S. K. Khanna. HRIS 16. ACTIVE

(6) Concept of Lateral Confinement in Pavement Analysis and Design. To study structural behavior of flexible pavements on desert sands under whell loads and suggest design method. H. C. Mehndiratta, S. K. Khanna, K. B. Agarwal. HRIS 24. ACTIVE

(7) An Integrated Transportation System Planning for Local Area. Transportation system scheduling for intercity travel, optimized for operator and user systems, resulting in reduction of waiting time and a minimum operating cost. S. K. Khanna, M. G. Arora, V. Kumar. HRIS 12. ACTIVE

11. d. (8) A Systems Approach to Flexible Pavement Design Problems. To develop models for predicting fatigue cracking, permanent deformation and low temperature cracking in bituminous pavements. S. K. Khanna, M. G. Arora, S.P. Bindra. HRIS 24. ACTIVE

(9) Pressure Transmission Characteristics in Different Flexible Paving Surfaces. Study of the structural behavior of bituminous surfaces, considering the variation of the modulus of the material with time and depth. S. K. Khanna, M. G. Arora, K. R. Narayana Swamyselty. HRIS 31. ACTIVE

(10) Computer Simulation of Signalized Intersections for Mixed Traffic Flow in a Metropolis. To consider behavior of such traffic in the design of traffic signals, with development of a computer program to assist in the simulation. S. K. Khanna, M. G. Arora, G. K. Agarwal. HRIS 54. ACTIVE

(11) Development of a Regional Road Plan by Use of Landsat Imageries. To develop a theoretically sound practicable and simple approach in the development of a transport network for Northern Region, using satellite imageries. S. K. Khanna, S. Tiwari, M. G. Arora, S. P. Bindra, A. K. Baghchi. HRIS 21. ACTIVE

(12) Optimal Assignment Model for Air Transport Network. To analyze the variables affecting air travel to establish the behavior of those variables and to develop an assignment model with a view to increased network efficiency and utilization of aircraft. S. Venkatesh, S. K. Khanna, M. G. Arora. HRIS 11. ACTIVE

(13) Characteristics of Granular Mixes Under Repeated Traffic Loading. To study the resilient characteristics of granular mixes under various combinations of axial and radial stresses using repeated load, triaxial cell simulating prototype traffic conditions. S. P. Bindra, S. K. Khanna, M. G. Arora. HRIS 24. ACTIVE

(14) Development of a Methodology for Evaluation of Structural Capacity of Flexible Pavements in the Region of Punjab, Uttar Pradesh and Himachal Pradesh. To develop a method for structural evaluation of existing flexible pavements using Benkelman beam rebound deflection. S. K. Khanna, M. G. Arora, H. C. Mehndiratta, S. P. Bindra. HRIS 24. ACTIVE

(15) Analysis of Mixed Traffic Flow Variables. To study the interactions of various variables which affect the network traffic demand with special reference to hetrogeneous mixed traffic flow on urban roads. A. K. Gupta, S. K. Khanna. HRIS 55. ACTIVE

(16) Transport Network for Rural Development. To determine road lengths and road patterns of rural areas by use of landsat imageries/aerial photographs of the various regions in India, including land use, soil type, etc. S. K. Khanna, M. G. Arora, S. P. Bindra. HRIS 61. ACTIVE

(17) Study of Efficiency of Measures for Cutting Off/Lowering Water Table for Different Soils. To study various measures for different soils with a view to designing optimal drainage systems of highway and airport pavements. S. K. Khanna, M. G. Arora, S. P. Bindra, H. C. Mehndiratta. HRIS 63. ACTIVE

(18) Urban Bus Transport Route Analysis and Design. To study the metropolitan bus operations to identify the factors which contribute to route choice and medal choice. S. K. Khanna, M. G. Arora, A. K. Gupta. HRIS 11. ACTIVE

13. KERALA HIGHWAY RESEARCH INSTITUTE: Sasthamangalam, Trivandrum, Kerala

(3) Studies on Road Safety Problems. To identify accident-prone locations in Kerala road network, and to suggest corrective measures. S. Ramakrishna Iyer & others. HRIS 51. ACTIVE

(4) Studies on Rubberized Bituminous Concrete Construction. To assess performance of rubberized bitumen in road surfacing, quality and quantity-wise. Flexible Pavement Division. HRIS 31. (Citations) COMPLETE

(5) Use of Cationic Asphalt Emulsion for Bituminous Surfacings. To lay test tracks of different types of thin bituminous surfacings using cationic asphaltic emulsions and watch the performance. S. R. Iyer, V. Chacko. HRIS 31. ACTIVE

(6) Study of Spectrum of Axle Loads on Roads in Different Regions. To determine frequency distribution of axle loads of commercial vehicles on different roads for pavement design purposes and for streamlining the policies about weights and dimensions of vehicles. Staff. HRIS 55. ACTIVE

(7) Engineering Properties of Coarse Aggregates of Different Quarries in Kerala. To study the engineering properties of coarse aggregates and ascertain the suitability of their use as road aggregates. Flexible Pavement Division. HRIS 35. ACTIVE

New Project

(8) Survey and Evaluation of Locally Available Materials in Kerla. To survey, test, evaluate and compile information about the availability and suitability of locally found cheaper road making aggregates for optimum exploitation by different highway agencies. Staff. HRIS 35. ACTIVE

14. MAHARASHTRA ENGINEERING RESEARCH INSTITUTE: Nasik-422004, Maharashtra

(3) Case Studies of High Embankments on Marine Clay. To study the properties of Marine clay deposits under embankment loads, and to evaluate the embankment behavior. P. K. Nagarkar, S. G. Deshmukh, T. W. Shurpal. HRIS 62. COMPLETE

(8) Performance of Various Bituminous Wearing Surfaces. To evaluate the suitability of various bituminous surfaces under a variety of rainfall and traffic densities. P. K. Nagarkar, V. T. Kulkarni, M. R. Swamy, HRIS 31. ACTIVE

(9) Edge Stiffening Effect of Bridge Curbs. To study the effect of parapet curbs on bridge deck slabs in dispersing loads. P. K. Nagarkar, A. M. Gokhale, M. S. Grud, J. H. Tipre, N. B. Mahajan. HRIS 25. ACTIVE

(13) Behavior of Raft Foundation for Bridges. To determine behavior of raft slabs and moment coefficients from direct models. P. K. Nagarkar. A. M. Gokhale, R. D. Karrane, M. S. Garud, J. H. Tipre. HRIS 27. ACTIVE

(14) Study of Seasonal Moisture Variation in Road Banks and Cuttings. To ascertain actual field moisture over the year to permit more accurate application of CBR in design. P. K. Nagarkar, V. T. Kulkarm, P. A. Tannu. HRIS 63. ACTIVE

(17) Test Track on Jamner-Icchapur Road. Study relative performance of flexible pavement on different subbases, as well as different asphalt surfaces. P. K. Nagarkar, V. T. Kulkarni, M. R. Swamy. HRIS 24. ACTIVE

(19) Temperature Viscosity Relationship of Asphalt (Part I). Preparation of temperature viscosity relationship curves for different grades of normally used asphalts. P. K. Nagarkar, V. T. Kulkarni, G. V. Desai. HRIS 31. COMPLETE

14. (20) Classification of Predominantly Occuring Soils and Soft Stones in Various Regions of the State. To establish in general terms the values of different soil types for use in subbase and other courses of road crust. P. K. Nagarkar, V. T. Kulkarni, P. D. Aher. HRIS 61. ACTIVE

(22) Test Track on Shirpur-Raver-Burhanpur Road. To utilize locally available river shingle in lieu of conventional crushed aggregate for road surfaces. P. K. Nagarkar, V. T. Kulkarni. HRIS 24. ACTIVE

(23) Roads in Waterlogged Areas - Measures for Constructing Durable and Serviceable Roads. To study efficacy of different types of capillary cut-off between subgrade and subbase. P. K. Nagarkar, V. T. Kulkarni, P. A. Tanmu. HRIS 63. ACTIVE

(24) Experimental Test Track using Soft Stones Aggregates viz. Quartzite, on Nilaj-Pauni Road. To utilize locally available material quartzite in lieu of conventional trap aggregates for base and wearing surface and evaluate the performance. P. K. Nagarkar, G. V. Desai, V. T. Kulkarni. HRIS 35. ACTIVE

(25) Experimental Test Track on Sawantwadi-Aronda-Reddi Road, Ratnagiri District. To construct test track for evaluation of performance of wearing surfaces over soft material, such as water-bound laterite macadam. P. K. Nagarkar, V. T. Kulkarni, G. V. Desai. HRIS 24. ACTIVE

(26) Test Track on Apatapa-Mhaisang Road, Akola District. To utilize locally available material such as lime, fly-ash and sand for experimental test track in lieu of conventional materials like moorum and aggregate. P. K. Nagarkar, V. T. Kulkarni, G. V. Desai. HRIS 24. ACTIVE

(29) To Develop Data on Growth of Highway Traffic in Different Regions for Different Categories of Roads. To determine such factors as hourly and other periodic and seasonal variation in traffic averages, trend in growth, composition and number of axles per commercial vehicles. P. K. Nagarkar, V. T. Kulkarni, H. D. Joshi. HRIS 55. ACTIVE

(30) Study of Spectrum of Axle Loads. To determine frequency distributions of axle loads of commercial vehicles on different roads for pavement design purposes and for streamlining policies on weights and dimensions of the vehicles. P. K. Nagarkar, V. T. Kulkarni, H. D. Joshi. HRIS 55. COMPLETE

(31) Test Track for Bullock Track Traffic on Pune-Nasik Road, N.H. 50, Near Sangamner. To construct and test tracks of different specifications for bullock cart traffic and observe performance. P. K. Nagarkar, V. T. Kulkarni, M. R. Swami. HRIS 24. ACTIVE

(32) Behavior of Flexible Overlay of Water Bound Macadam and Bituminous Wearing Course Over Distressed Rigid Pavement in Waterlogged Areas. To study the performance of such overlays. P. K. Nagarkar, V.T. Kulkarni, M. R. Swami. HRIS 24. ACTIVE

(33) Study of Performance of Various Types of Wearing Surfaces Laid in Test Tracks on Nasik-Dindori Section of S. H. 11. To assess the performance of 12 mm thick premix carpet with graded aggregate without seal coat in relation to conventional 20 mm thick premix carpet with seal coat. P. K. Nagarkar, V. T. Kulkarni, M. R. Swami. HRIS 24. ACTIVE

(35) Design of Skew Slab. Tests on skew slabs and formulation of influence surfaces for moments at critical points. P. K. Nagarkar, A.M. Gokhale, R. D. Karane, N. S. Mahajan. HRIS 25. ACTIVE

New Projects

14. (37) Study of Specifications for Rural Roads Programme with Black Topped Surface in the State of Maharashtra. Change in specifications to provide for use of local materials to increase serviceability and reduce maintenance. P. Nagarkar, V. Kulkarni, P. Aher. HRIS 24. ACTIVE

(38) To Study the Performance of Cationic Emulsion in Road Pavements. To construct 10 test stretches of 1 Km. each using cationic emulsion with different specifications and under different climatic conditions. P. Nagarkar, V. Kulkarni, P. Aher. HRIS 24. ACTIVE

(39) Stability of Armour Protection Against Wave Action on Karanja Side Approach to Bridge Across Dharamtar Creek. To test the size of armour stones required to protect the Karanja side approach against wave action during monsoon. P. Nagarkar, B. Ramrao, J. Lunawat, G. Karanjkar. HRIS 22. COMPLETE

(40) Stability of Armour Protection Against Wave Action on Rewas Side Approach to Bridge Across Dharamtar Creek. To test the size of armour stones required to protect the Rewas side approach against wave action at different chainages during monsson. P. Nagarkar, B. Ramrao, S. Joshi, B. Tambe. HRIS 22. COMPLETE

16. GUJARAT ENGINEERING RESEARCH INSTITUTE: Vadodara, Gujarat State

(2) Model Studies for Smarkhadi Bridge, Rajpipla. Model study of proposed two additional spans to find effects of additional waterway on flow characteristics. Hydraulic Division Team. HRIS 22. COMPLETE

(3) Model Studies for Bridge on Wankikhadi on Limdi Road. A study of groins to protect a bridge abutment from erosion. Hydraulic Division. HRIS 22. COMPLETE

(4) Approaches and Guide Bund to Bridge of Narmada. Construction and observation of high approach banks and bunds as means to control flood effects. Soil Mechanics Division. HRIS 22. COMPLETE

(5) Model Studies for Bridge on Wankdi Khadi. A study to determine the effects of providing a groin to direct flood flows on right bank abutment of this bridge. HRIS 22. COMPLETE

(6) Model Studies for Sumarkhadi Bridge. A study using models of the effect of adding two more spans to this bridge to provide additional waterway. HRIS 22. COMPLETE

(7) Experimental Road Constructed Using Lime Surkhi Sand Metal Concrete Panam Godar Road. Observe behavior of road section using lime surhki sand metal concrete as base course and compare with section constructed using the conventional method. HRIS 35. ACTIVE

(8) Study of Temperature Effect on Stability and Flow of Bituminous Mixes in Marshall Test. A study of the effects in stability and flow while testing at and below 60° C. HRIS 31. ACTIVE

(9) Ageing of Different Grades of Bitumens used in Different Mixes under Different Conditions. Study of the stability, flow, density, etc. of two grades of bitumen binder with both dense and open graded aggregates in various atmospheric conditions. HRIS 31. COMPLETE

(10) Survey and Evaluation of Locally Available Materials. To carry out a systematic survey and evaluation of locally available materials to provide data in regard to their location and suitability in road pavements. Staff. HRIS 35. ACTIVE

16, (11) Use of Vertical RCC Kiln for Lime Burning. To study the efficiency of this kiln of 1.22 meters diameter and 12.50 meters in height for burning lime stones. M. T. Division. HRIS 41. ACTIVE

New Project

(12) Soil, Lime Stabilization Using Locally Available Lime and Poor CaO Content - Jolwa Pakhajan Road. To study the change in soil structure when mixed with different percentages of lime of poor quality. Staff. HRIS 62. ACTIVE

17. REGIONAL RESEARCH LABORATORY: Jorhat-6, Assam

(1) Artificial Nodulized Aggregates With Soil Cement. Development and tests of a manufactured aggregate consisting of local soil, Portland cement, and a water proofing agent; the tests being to verify their adhesion to bituminous binders and their impact values. M. S. Iyengar, Y. C. Gokhale, K. L. Arora, M. K. Nambiar. HRIS 35. ACTIVE

(2) Vertical Shaft Kiln for Cement Manufacture. To develop out of local material and manufacture an economical cement plant, that could be easy to transport and erect for small daily output. M. S. Iyengar, Laboratory Staff. HRIS 32. ACTIVE

(3) Prefabricated Bituminous Blocks. A study of the use of prefabricated bituminous blocks for road construction so as to achieve economy, speed in construction and economic utilization of material. U. N. Sinha. HRIS 31. ACTIVE

(5) Artificial Nodulized Aggregate with Soil Cement. To test and develop a manufactured aggregate made from local soil, portland cement and a water-proofing agent. U. N. Sinha, M. K. C. Mambiar, A. C. Khazanchi. HRIS 35. (Citations) ACTIVE

18. CONTROL AND RESEARCH LABORATORY, PUBLIC WORKS DEPARTMENT: Bhubaneswar, Orissa

(5) Lime Reaction on Alluvial Soil and Improvement of Strength Characteristics. Use of soil with Kankar Lime and fly ash to provide more economical construction. HRIS 62. INACTIVE

(6) Study of Road Accidents on National Highway No. 5. To study the increase of accidents, locate accident-prone zones, determine causes and recommend remedial measures. HRIS 51. INACTIVE

(7) Fungal Action on Building Materials. Study detrimental and beneficial (if any) effects of different fungi, and develop methods for inhibiting their growth. G. Gupta. HRIS 34. (Citations) ACTIVE

(8) Collaborative Experiments - Construction of Road Crust with Lime-Fly Ash Specification Near Talchar. To use fly ash available as waste product from thermal power station in base and subbase courses. Staff. HRIS 62. COMPLETE

(11) Strengthening of Flexible Pavements by Benkelman Beam Deflection Data. To carry out structural evaluation of flexible pavements by this method with a view to determining the thickness of overlays required. N.K. Rath, P. K. Das. HRIS 24. ACTIVE

(12) Study of Behavior of Cohesive Subsoil After Release of Overburden. To study behavior of this subsoil and arrive at the true safe bearing capacity of the soil. P. K. Das, S. Dash. HRIS 62. ACTIVE

18. (13) Study of the Behavior of Expansive Marine Clay Used in Embankment Construction of Basudevpur - Dhamara Road. Field and laboratory studies during the embankment construction with marine clay subjected to heavy flooding and tidal action. N. K. Rath, P. K. Das, A. K. Tripathy. HRIS 62. ACTIVE

New Projects

(14) Evaluation of Locally Available Building Material in Orissa State. T survey, test, evaluate and compile information about the availability and suitability of locally found cheaper road making aggregates for optimum exploitation by different highway agencies. P. Das, B. Mohanty, B. Patnaik. HRIS 35. ACTIVE

(15) Study on the Flakiness Index on Broken Stone Products. To study the effect of breakage on properties of fine grained compact stones used in bituminous construction. P. Das, M. Das. HRIS 35. ACTIVE

(16) Effect of Size of Stone Metal in Strength Tests. To conduct abrasion and impact tests on a variety of sizes and kinds of stone products to determine the nature of the variations. P. Das, M. Das. HRIS 35. ACTIVE

19. ARMY HEADQUARTERS, ENGINEER-IN-CHIEF'S BRANCH, D.H.Q.P.O.: New Delhi 110011

New Projects

(3) Emergency Repair of Airfield Pavements Using Precast Concrete Blocks. To evaluate the performance of precast concrete blocks in emergency repair of airfield pavements. Staff. HRIS 24. ACTIVE

(4) Use of Continuously Reinforced Concrete Pavements with Elastic Joints in Runways and Taxi Tracks. To evaluate the performance of continuously reinforced concrete pavements with elastic joints in runways and taxi tracks. Staff. HRIS 24. ACTIVE

(5) Fibre Reinforced Concrete Pavements for Use by Tracked Vehicles. To assess suitability, evolve designs, and develop construction techniques of fibre reinforced concrete pavements for use by tracked vehicles. Staff. HRIS 24. ACTIVE

20. ASSOCIATED CEMENT COMPANIES CENTRAL RESEARCH STATION: Thane-4, Bombay 400020

(1) Determination of Bond of Steel to Concrete. To develop a simple technique for flexural bond test. P. J. Jagus, R. N. Green, M. S. Marathe, A. D. Bapat. HRIS 32. ACTIVE

(2) Expansive Cements - Development of Shrinkage Compensating Cement. To develop a cement with expansive potential in concrete at early ages. P. J. Jagus, M. R. Vinyaka, A. D. Gapat. HRIS 32. ACTIVE

(3) Investigations on Production of Lightweight Aggregate and Its Use in Structural Concrete. To develop manufacturing techniques using bloatable clays for producing lightweight aggregate. P. J. Jagus, M. R. Vinayaka, M. S. Marathe, A. D. Bapat, T. N. Venkatesan. HRIS 35. ACTIVE

(4) Resistance to Sulphate and Sea Water Attack on Cement Mortar and Concrete. To determine resistance of mortars and concrete using Portland cement, slag, or pozzolan cements. P. J. Jagus, R. N. Green, A. S. Heble, M. R. Vinyaka, J. P. Unwalla. HRIS 32. ACTIVE

(5) Expansive Cement - Development of Shrinkage Compensating Cement. Investigation of non-shrink grouts based on shrinkage compensating cement. P. J. Jagus, M.R. Vinayaka, A.D. Bapat, A.S. Heble. HRIS 32. ACTIVE

20. (6) Resistance to Sulphate and Sea Water Attack on Cement Mortar and Concrete. Study of performance of ordinary portland cement, blast furnace slag cement and pozzolana cement on exposure to sodium sulphate and sea water, and the influence of high alumina slag on sulphate resistance. P. J. Jagus, M. R. Vinayaka, R. N. Green, A. S. Heble, J. P. Unwalla. HRIS 32. ACTIVE

(8) "REDISET" Ultra Rapid Hardening Cement. To develop a type of cement which can produce very high strengths in mortar and concrete in a matter of 3 to 4 hours without showing retrogression. P. J. Jagus, M. R. Vinayaka, V. R. G. Srivinasan, P. S. Parameshwaran. HRIS 32. ACTIVE

(9) Fly-ash Studies - Utilization of Fly-ash to Produce Portland Pozzolana Cements. To study the chemical and physical properties of Indian fly-ashes to produce cement that will conform to Indian standards. P. J. Jagus, M. R. Vinayaka, V. S. Taste. HRIS 32. ACTIVE

New Project

(10) Portland Pozzolana Cement Concrete. To investigate the performance of Pozzolana cement through bond, compressive strength and modulus of rupture tests and corrosion studies. P. Jagus, M. Vinayaka, A. Bapat. HRIS 32. ACTIVE

New Project

21. S. P. BANERJEE: 6/1, Lindsay St., Calcutta 700016

(5) Analysis of Bridge Deck System by Elastic Compatibility Method. To develop a simpler method of analysis for bridge deck systems based on a theory developed by Banerjee for the analysis of beams on elastic foundations. S. Banerjee. HRIS 25. ACTIVE

22. VISVESVARAYA COLLEGE OF ENGINEERING, BANGALORE UNIVERSITY, CIVIL ENGINEERING DEPARTMENT: Bangalore 560056

(2) Traffic Studies, Nagpur. To carry out traffic studies for the city of Nagpur. R. N. Ingle, A. V. Gijre. HRIS 12. ACTIVE

(3) Design of Interconnected Bridges. To carry out theoretical and experimental investigations of various cases of interconnected bridges subjected to abnormal wheel loads. M. M. Basole. HRIS 25. ACTIVE

(4) Experimental Stabilized Base Course with Lime and Fly Ash on NH-6 Near Bhandara, Nagpur. To assess the performance, serviceability and structural adequacy of stabilized base courses using lime and fly ash and locally available materials. R. N. Ingle, M. M. Basole, S. P. Jog, D.J. Katyayan. HRIS 62. ACTIVE

New Projects

(5) Evaluation of Different Overlays. To evaluate different types of flexible overlays laid over flexible pavements using different materials, thicknesses and methods of construction. C. Justo, V. Ramachandran, A. Rajagopal, C. Ramadas. HRIS 24. ACTIVE

(6) Evaluation of Flexible Pavements and Overlays. To develop a nondestructive method for structural evaluation of flexible pavements under actual design wheel loads and to arrive at the thickness requirement of flexible conditions. C. Justo, C. Ramadas. HRIS 24. (Citations) ACTIVE

New Projects

22. (7) Delays at Signalized Intersections. To evaluate the total delays of various classes of vehicles in the mixed traffic flow at intersections due to fixed-time automatic traffic signals and the effects of varying the signal phases and cycle lengths. C. Justo, V. Ramachandran, A. Kumar. HRIS 55. ACTIVE

(8) Cast-In-Situ Cement Concrete Multi-Circular Vented High Bridges. To develop a rational method of designing cast-in-situ multicircular vented cement concrete bridges for highway and experimental verification by model tests. K. Lakshminarayana, H. Venkatachala Murthy. HRIS 25. (Citations) ACTIVE

(9) Dynamic Response of Highway Bridges Under Moving Loads. To study the various parameters that affect response of bridges under moving loads under both free as well as forced vibration. B. Rajanna, N. Munirudrappa. HRIS 25. (Citations) ACTIVE

23. DEPARTMENT OF CIVIL ENGINEERING, S.V. REGIONAL COLLEGE OF ENGINEERING AND TECHNOLOGY: Surat-7 (Gujarat)

(1) Mass Transit in Surat. A study of the needs of mass transit of Surat City with a view to improve the efficiency of the transport, the road and the service routing. N. Shah, B. K. Katti, R. N. Shelat, S. C. Saxena. HRIS 13. COMPLETE

(3) Redevelopment of Terminal Areas in Surat. A study of the need to redevelop certain areas in Surat which create traffic hazards, and cater to a large number of transportation vehicles. R. N. Shelat, N. Shah, S. P. Arora. HRIS 13. COMPLETE

(9) Location of Bus Stops - Case Study of Main Road - Surat City. To improve the efficiency of bus operations by determining optimal location of bus stops. N. C. Chah, B. K. Katti. HRIS 16. COMPLETE

(14) Study of Mixed Traffic Behavior at Urban Intersections. To develop a simulation model for study of this behavior at priority and signalized intersections, so as to predict intersection performance, evaluate capacity and establish design criteria and control strategies. B. K. Katti, S. Raghavachari. HRIS 55. ACTIVE

(15) Disaggregated Stochastic Behavior Travel Demand Models for Indian Commuters. To develop such models for study of the effect of policy variations on demand changes. S. Raghavachari. HRIS 16. ACTIVE

(16) Traffic Demand Estimation for Regional Transportation Planning. To develop appropriate demand models for passenger and goods movements. B. P. Chandrasekhar, S. Raghavachari. HRIS 13. ACTIVE

(17) Simulation Study of Roadway Capacity for Mixed Traffic Conditions. To develop a model using simulation techniques taking into account driver behavior, overtaking logic, number of lanes and percentage composition of slow and fast traffic, etc. T. V. Ramanayya, K. S. Pillai, S. Raghavachari. HRIS 55. ACTIVE

(18) Permanent Traffic Counting Stations. A study of daily, weekly, monthly and yearly variations of traffic by composition, to establish factors for use at other sites. A. Raghavachari, B. P. Chandrasekhar. HRIS 13. ACTIVE

25. REGIONAL ENGINEERING COLLEGE: Warangal 506004, Andhra Pradesh

(8) Simulation Study of Roadway Capacity for Mixed Traffic Conditions. Simulation study of the heterogeneous traffic to calculate equivalent passenger car units and, in turn, street capacity. S. Raghave Chari, K. S. Pillai, T. V. Ramanayya. HRIS 55. COMPLETE

(12) Development of Specifications for the Erection of Permanent Traffic Counting Stations on Indian Highways. K. S. Pillai, B. P. Chandrasekhar. HRIS 55. COMPLETE

(14) Multinomial Logit Mode Split Model for Indian Cities. Study of the problems associated with development of mode split models in a multi vehicle environment. S. Raghavachari. HRIS 13. ACTIVE

(15) Simulation of Mixed Traffic Flow at Urban Intersections. To develop a computer simulation model for mixed traffic and roadway conditions at urban junctions to evaluate delays, estimate capacity and provide design criteria. S. Raghavachari, R. K. Katti. HRIS 55. COMPLETE

(16) Development of Land Use-Transportation Demand Model for the Spatial Allocation of Activities and Land Uses in Metropolitan Areas. To develop a model that will produce land use patterns in relationship with the transportation demand to assist town and transportation planners. S. Raghavachari, P. V. Ramana, Moorthy. HRIS 15. ACTIVE

(17) Bullock Cart Design. Identify and define parameters of the bullock cart and its components, and conduct correlation studies on weight, volume, speed, tractive effort etc. K. Nagireddy, S. Subramanyam, B. G. Krishna Reddy. HRIS 53. ACTIVE

(18) Design, Construction and Performance of Reinforced Earth Embankments. Study of the long-term performance under actual weather and traffic conditions in a tropical country. M. Venkata Ratnam, G. Subramanyam. HRIS 33. ACTIVE

(20) Development of Regional Transportation Demand Models. To develop demand models for regional transportation, including formulation of behavioral model demand and verification for different highway systems. S. Raghava Chari, B. P. Chandeasekhar. HRIS 55. ACTIVE

New Projects

(27) Location of Permanent Traffic Counting Stations in Andhra Pradesh. To establish need, location, and criteria for number of permanent traffic counting stations on major highways in Andhra Pradesh State. S. Raghava Chari, B. Chandrasekhar. HRIS 55. COMPLETE

(28) Optimal Bus Route Network Design for an Urban Area. To identify bus routes in a city which will promote maximum utility of them. S. Raghava Chari, S. Gupta. HRIS 12. ACTIVE

(29) Development of Category Analysis for Trip Generation. To develop category analysis for home based trip productions incorporating cycle, scooter, car ownerships and the income variations for Indian cities. S. Raghava Chari, Nagabhushanam. HRIS 12. ACTIVE

26. REGIONAL ENGINEERING COLLEGE: Tiruchirapalli-15

(1) Mineral Fillers for Sheet Asphalt Mixtures. To evolve a simple beam test by which different mineral fillers in sheet asphalt mixtures can be evaluated, using accelerated creep tests. V. Venkatasubramanian, T.S. Venkataraman. HRIS 31. ACTIVE

27. DEPARTMENT OF CIVIL ENGINEERING, UNIVERSITY OF JODHPUR: Jodhpur, Rajasthan

(2) Deformation Characteristics of Rajathan Desert Soils. Study of deformation on these soils including settlement and time-rate settlements. A. Singh, M. L. Ohri, N. K. Mot. HRIS 62. ACTIVE

(3) Development of an Auxiliary Test Kit (Trafficability) and Related Studies. A study of the off-road mobility aspects of heavy vehicles, and study of changes in soil properties under moving vehicles. A. Singh, M. I. Ohri. HRIS 24. ACTIVE

(4) Development of Auxiliary Test Kit (Trafficability) and Related Studies. To determine the average initial strength and changes in strength of soils under off-road traffic. A. Singh, M. L. Ohri. HRIS 61. ACTIVE

(5) Deformation Characteristics of Rajasthan Desert Soils. A study of deformation modulus and time rate settlement of desert soils from stress and strain history so as to predict their total settlement. A. Singh, M. L. Ohri, N. K. Mot. HRIS 61. ACTIVE

28. COLLEGE OF MILITARY ENGINEERING: Pune-31

(1) Load Transfer Characteristics at Construction Joints in PCC Pavements. A study to provide a rational basis for accurately assessing load transfer characteristics at construction joints under specified environmental conditions. A. K. Deb, C. T. Chari. HRIS 32. COMPLETE

(2) Structural Design of Airfield Pavements using Lime-Flyash-Aggregate Mixes (2nd Phase). To evolve suitable design method to determine thickness of this mix for base course. Lt. Col. Avtar Singh, A. K. Chaturvedi. HRIS 24. (Citations) COMPLETE

(3) Uniformity of Compressive Strength of Concrete Cores from PCC Pavements. To determine the statistical deviation of compressive strength of cores. Capt. R. K. Singh, Capt. R. N. Dubey. HRIS 32. COMPLETE

(4) Mix Design of Lime-Flyash-Aggregate Concrete. To evolve a method whereby the proportions of these constitutents can be arrived at to achieve concrete of a particular design strength. R. N. Dubey. HRIS 32. COMPLETE

(5) Steel Fiber Reinforced Concrete Overlays. To study the suitability and thickness requirements of these overlays over existing PCC pavements. R. K. Singh. HRIS 32. COMPLETE

(6) Use of Portland Pozzolana Cement in New Airfield Pavements. To study the engineering properties of this cement in the specific context of using it for airfield pavement. Maj. R.P.S. Mallik, Capt. N.L. Pandey. HRIS 32. ACTIVE

(7) Fibre Reinforced Cement Concrete Test Track at Ahmednagar for use by tracked vehicles. To study the flexural strength of fibre-reinforced concrete as compared with PCC and also to study the behavior of fibre-reinforced overlay concrete. Maj. R.P.S. Mallik, Y.N. Ramamurthy. HRIS 32. ACTIVE

29. CIVIL ENGINEERING DEPARTMENT, MALAVIYA: REGIONAL ENGINEERING COLLEGE: Jaipur 302004

(1) Aggregate Testing Program. A comparative study of aggregate qualities in various quarries in Rajastan State. S. L. Dhingra, D. D. Soni. HRIS 35. ACTIVE

30. ANDHRA PRADESH ENGINEERING RESEARCH LABORATORIES: Himayatsagar, Hyderabad 500030

(2) Model Studies on the River Flow at the Existing Bridge Site Down Stream of Nagarjuna Sagar Dam. To study flow pattern, velocities and pressures on piers with the bridge raised on existing piers or for an entirely new location. S. A. Wali Quadri, M. Ramaswamy, A.S.H. Gopal Rao. HRIS 22. ACTIVE

(3) Hydraulic Model Studies on the Proposed New Bridge below Nagarjunasagar Dam. Study of the flow at each pier, distribution of velocities around piers, and comparative performance of alternate shapes. V. S. H. Gopala Rao, A. K. M. Jilani, M. Rama Swamy. HRIS 22. ACTIVE

31. PUBLIC WORKS DEPARTMENT, MADHYA PRADESH - SUPERINTENDING ENGINEER (DESIGN): Bhopal

(3) Sand-Soil Stabilized Layer in Lieu of Stone Boulder Subbase Course. An examination of the efficiency of sand-soil stabilized layers used as replacements for stone boulder subbase course. M. D. Arora, Syed Tufail Ahmad, R. P. Mishra. HRIS 62. ACTIVE

(4) Use of Naturally Occuring Gravel Mixture in Road Construction. Study of the properties of naturally occuring gravel mixtures in Madhya Pradesh and determine their suitability for use in road construction. M. D. Arora, Syed Tufail Ahmad. HRIS 62. ACTIVE

(5) Lime Stabilized Soil Subbase in Black Cotton Area. A study of the effectiveness of lime stabilized soil subbase in preventing intrusion of black cotton soil subgrade into the pavement structure. M. D. Arora, Syed Tufail Ahmad. HRIS 62. ACTIVE

(6) Survey and Evaluation of Locally Available Materials. A survey and evaluation of locally available materials to provide data in regard to location and suitability for road pavements. M. D. Arora, Syed Tufail Ahmad. HRIS 61. ACTIVE

New Projects

(9) To Develop Data on the Growth of Highway Traffic in Different Regions on Different Categories of Roads. To gather information about road usage and traffic growth in order to plan surface improvement and future growth of the network. M. Arora, V. Moghe, S. Ahmad HRIS 12. ACTIVE

(10) Study of Spectrum of Axle Loads in Different Regions of Madhya Pradesh. To conduct surveys for frequency distribution of axle loads of commercial vehicles plying on different roads for rationalizing the pavement design procedures and streamlining the policies about weights and dimensions of vehicles. M. Arora, R. Shrivastava, Mehta, S. Tufail Ahmad. HRIS 12. ACTIVE

32. DEPARTMENT OF HIGHWAY ENGINEERING, PUNJAB ENGINEERING COLLEGE: Chandigarh

(13) System Engineering Concepts as Applied to Design of Flexible Pavements. To compare design thickness requirements by conventional CBR method and the functional method with reference to local conditions, type of base and subgrade, traffic, type of pavement, climate, etc. S. P. Bindra, D. L. Agarwal. HRIS 24. ACTIVE

(14) Use of Profilograph Apparatus in the Study of Riding Characteristics of Chandigarh Roads. Assess riding characteristics of different types of roads and suggest measures to reduce surface unevenness. O. S. Sehgal, S. P. Bindra, C. L. Arora. HRIS 24. ACTIVE

32. (15) Thickness Design of New Highway Pavements and Improvement of Existing Ones by Benkelman Beam Deflection Procedure. To apply the AASHO procedure for pavement design and a comparison with conventional methods for reconstruction and construction. K. L. Bhanot, T. C. Sood. HRIS 24. ACTIVE

(16) System Engineering Approach to Flexible Pavement Design. To collect information on factors governing design and performance of the pavement and evolve a system approach for design based on functional requirements. O. S. Sehgal, K. Singh, D. L. Agrawal. HRIS 24. ACTIVE

(18) Engineering Uses of Flyash. To prepare information on potential uses of flyash in civil engineering construction. H. C. Bhatia, J. S. Cheema. HRIS 34. ACTIVE

(19) Critical Evaluation of Street Lighting System in Chandigarh. To assess the present level, adequacy inadequacy of the system and suggest economical means of bringing the system to accepted standards. O. S. Sehgal, K. Singh, A. Singh. HRIS 51. ACTIVE

(20) Critical Study of Road Accidents in Chandigarh. An analysis of patterns and trends of accidents and attendant conditions and suggest measures for minimizing accidents consistent with efficent and safe traffic operations. K. Singh, J. Singh. HRIS 51. ACTIVE

(21) Assessment of Selected Driving Characteristics of Drivers using Driver Testing Apparatus. Assessment of important characteristics with a view to determining abilities for safe driving and to suggest requirements for licensees. O. S. Sehgal, K. Singh, P. W. Aggarwal. HRIS 52. ACTIVE

(22) A Critique of the Design of Selected Signalized Intersections in Chandigarh. To study performance of such intersections, bring out shortcomings and suggest optimization of timings. H. C. Bhatia, K. Singh, R. Batra. HRIS 54. ACTIVE

(23) Forecasts of Future Numbers of Vehicles in Chandigarh. To apply more promising techniques for forecasting future numbers of vehicles. H. C. Bhatia, K. Singh, D. R. Singla. HRIS 13. ACTIVE

(24) Modifications of the Properties of Certain Granular Soils by Vibratory Compaction. A study of the efficiency of the vibratory method of compaction and the changes in properties at various relative densities. K. L. Bhanot, M. S. Ghuman, J. Singh. HRIS 62. ACTIVE

(25) Strength and Consolidation Characteristics of Chandigarh Soil. Study of soil behavior for engineering use. K. L. Bhanot, M. S. Ghuman, A. Kumar. HRIS 62. ACTIVE

(26) Modification of the Local Soil by the Addition of a Suitable Proportion of Deficient Material to Improve the Subbase Strength of Low Cost Roads by Mechanical Stabilization. Economizing on road construction by using locally available materials. M. S. Ghuman, K. L. Bhanot, B. Ahmed. HRIS 62. ACTIVE

(28) A Critical Review of the Roadway Facilities and Location of Service Lines in New Urban Estates and Colonies of Punjab including Financial Aspects. A critical review of land-uses in major Punjab towns and assess shortcomings of roadway facilities and service lines within the right-of-way. K. Singh, D. S. Seehra. HRIS 15. ACTIVE

(29) Condition Evaluation of Chandigarh City Roads. A rideability evaluation of selected roads and development of correlation with the type of failure distress based upon serviceability concept. K. L. Bhanot, K. R. Wadhwa. HRIS 24. ACTIVE

32. (33) Use of Cement/Sand Mixtures for Improving the Strength of Soil for Use as Base/Subbase of Low Cost Roads. Study of the use of varying proportions of cement and sand for stabilizing base/subbase construction to achieve reduction in costs. K. L. Bhanot, G. Singh. HRIS 62. ACTIVE

33. VISVESVARAYA COLLEGE OF ENGINEERING; BANGALORE UNIVERSITY: Bangalore-1

(2) Investigation of Creep Behavior of Bituminous Mixes Using Ultrasonic Wave Methods. To study creep phenomenon with the objective of separating elastic and viscous effects dependent on both temperature and time. R. Sathyamurthy. HRIS 31. ACTIVE

(4) Evaluation of Pavement Surface Riding Quality. To develop and utilize a device to measure riding quality of pavements. C. E. G. Justo, V. Ramachandran, K. S. Kumar. HRIS 24. COMPLETE

(5) Creep Studies on Bituminous Mixes. To investigate the influence of temperature, binder content and stress levels on strengths and deformation properties of these mixes and the time and temperature dependant elasticities and viscosity of the mixes. R. Sathyamurthy, B. C. Nagabushana. HRIS 31. COMPLETE

(6) Noise Pollution due to Road Traffic. To evaluate the degree of annoyance due to road traffic noise and to suggest measures to reduce noise pollution. V. Ramchandran, C.E. G. Justo, K. S. Ravindranath. HRIS 17. COMPLETE

(7) Road Construction in Black Cotton Soil Area. Testing of roads built with different techniques on a variety of soils and evaluating structural and surface conditions during different seasons. C. R. G. Justo, R. Sathyamurthy, V. Chandrasekhar. HRIS 62. ACTIVE

34. TOWN AND COUNTRY PLANNING ORGANIZATION: Vikas Bhavan New Delhi

(1) Design of Exchange Bus Terminals, Delhi Urban Area. Study rider characteristics, estimate demand patterns at terminals , and design terminals to provide for vehicular and passenger requirements economically and efficiently. Staff. HRIS 13. ACTIVE

(2) Mass Rapid Transit System for Delhi. Study of traffic movement patterns, volumes and future demand projections based on land use and socioeconomic characteristics at different phases of development. Staff. HRIS 12. COMPLETE

(3) Study of Traffic Characteristics at Road Intersections in Delhi Urban Area. To work out the heterogeneity, vehicle occupancy, modal split and volume of traffic for various directional movements. Staff. HRIS 55. COMPLETE

36. ROAD RESEARCH LABORATORY: Srinagar, Kashmir

(1) Experiment on Low Cost Roads. Construction and observations of test tracks using locally available soil-gravel material. Staff of Hashmir PWD and CRRI. HRIS 33. ACTIVE

(2) Low Cost Roads with Local Material. Use of locally available materials to construct rural roads by mechanical stabilization. Staff of Kashmir PWD and CRRI. HRIS 33. ACTIVE

(3) Study of Properties of all Types of Stones Available in Mashmir and Scope of Its Utilization as Construction Material. G. R. Pirzada, M. Amin, A. Gani. HRIS 35. ACTIVE

(4) Design of Flexible Pavements on Rational Basis on Major Trunk Roads of Kashmir Valley. To assess the requirements of sound pavement design and to evaluate classification and strength characteristics of existing subgrade soils. C. R. Pirzada, M. Amin. HRIS 24. ACTIVE

37. KARNATAKA ENGINEERING RESEARCH STATION: Krishnarajasagara, Karnataka State

(2) Laboratory Studies on Stabilization of Black Cotton Soil Using Different Kinds of Admixtures, such as Lime, Cement, Surki, Gritty Soil, Sand and Lime Sludge, Staff. HRIS 62. COMPLETE

(3) Stabilization of Black Cotton Soil in Kukubur Tadimalangi Road Near T. Narasipura. To study the suitability of different specifications of subbase laid over black cotton soil subgrade. Staff. HRIS 62. COMPLETE

New Projects

(4) Construction of Stable Pavement in Yeriyur-Kestur Road in Black Cotton Soil - I Stage. To design a stable pavement of 800 meters on black cotton soil to improve its bearing capacity. Staff. HRIS 24. COMPLETE

(5) Laboratory Study on Molasses as an Admixture to Bitumen. To determine feasibility of using molasses as an admixture to bitumen both from the point of view of economy as well as for improving the workability. Staff. HRIS 31. ACTIVE

38. SCHOOL OF PLANNING AND ARCHITECTURE, I. P. ESTATE: New Delhi 110002

(7) Review of Trip Distribution Models. To moderate the conventional four stage modeling for application to Indian cities. M. S. V. Rao, A. K. Sharma, S. B. Basu. HRIS 55. ACTIVE

(11) Objective Assessment of the Role of Intermediate Public Transport in Cities of Different Sizes. To study the organization of the Intermediate Public Transport trade and their role in the satisfaction of the trip demand. M. S. V. Rao, V. K. Singhal, V. P. Sharma, A. Mitra. HRIS 11. ACTIVE

(12) Contribution to Urban Traffic Congestion by Intermediate Public Transport. To identify and evaluate the congestion effect of auto rickshaws and the behavioral characteristics of them in the urban traffic stream and the interpretation of the results to different levels of service for sound economic and functional utilization of the highway transportation system. M. S. V. Rao, V. K. Singhal, V. P. Sharma, A. M. Thirumurthy. HRIS 15. ACTIVE

(13) Environmental Impact Statement of Intercity Highway - Case Study, Delhi Meerut S. H. 45. To develop a quantitative method for the evaluation of the environmental effect of intercity highways in India, from the viewpoint of both user and resident angles. M. S. V. Rao, V. K. Singhal, V. P. Sharma, B. Chandrasekhar. HRIS 15. ACTIVE

New Projects

(14) Structural Transport Plan for Aurangabad District. To assess passenger transport in a backward region in order to project facilities needed for development. M. Rao, D. Sanyal, J. Kulkarni. HRIS 12. COMPLETE

(15) Scope for Introducing Electric Trolley Buses in Urban Settlements in India. To assess the need for introducing electric trolley buses in different sized Indian settlements in view of present and future energy situations and its effectiveness in relation to other modes of mass transportation. M. Rao, D. Sanyal, T. Elangovan. HRIS 13. COMPLETE

(16) Urban Traffic Models. To evaluate existing planning processes for metropolitan and medium size cities in India and suggest a simplification of urban traffic models which will relate to the size of settlements. M. Rao, P. Chhabra, M. Ahmad. HRIS 12. COMPLETE

39. CIVIL ENGINEERING DEPARTMENT, BANGALORE UNIVERSITY: Bangalore 560056

(4) Investigation of Creep Behavior of Bituminous Mixes Using Ultrasonic Wave Methods. Laboratory study using the ultrasonic wave propagation technique to study creep. R. Sathyamurthy. HRIS 24. (Citations) ACTIVE

(5) Measurement of Alcohol Content in Drunken Drivers. To design and fabricate a breath analyzer using electronic equipment for quantitative measurement. C. E. G. Justo, V. Bali. HRIS 52. COMPLETE

(6) Dynamic Skid Resistance Tester. To design and fabricate trailer type tester with electronic digital display. C. E. G. Justo, S. Nagabhushan. HRIS 24. COMPLETE

(7) Portable Skid Resistance Tester. To design and fabricate Pendulum Type Skid Resistance tester. C. E. G. Justo, R. Seshadri. HRIS 24. COMPLETE

42. INTERNATIONAL AIRPORTS AUTHORITY OF INDIA; DEPARTMENT OF ENGINEERING: 12 Hailey Road, New Delhi 11001

(2) Optimal Analysis and Design of Multilayered Airport Pavement System. To carry out integrated stress/strain computations due to actual strut loads of multi-wheeled aircraft and determining the optimal pavement needed. H. S. Bhatia, S. G. Gurjar, G. Singh. HRIS 24. COMPLETE

(6) Behavior of Material under Triaxial Loading. A study of pavement behavior under triaxial loading and stresses. H. S. Bhatia, H. K. Kulshrestha. HRIS 24. ACTIVE

(7) Behavior of Pavements Materials under Repetitive Loadings. A study of the behavior under this loading, including fatigue characteristics. H. S. Bhatia, H. K. Kulshrestha, M. Lal. HRIS 24. ACTIVE

(8) Evaluation of Runway Roughness and Development of Straight Edge Criteria. To devise straight edge criteria for construction control, well as to develop equipment to measure the degree of roughness. H. K. Kulshrestha, S. P. Mathur. HRIS 24. COMPLETE

(10) Study of Airfield Pavement Construction Techniques in Desert Areas. To develop an economical and rapid construction technique for desert airports where there is shortage of traditional materials and transportation and there is a problem of compaction of dune sand. H. S. Bhatia, H. K. Kulshreshtha. HRIS 33. COMPLETE

(11) Runway Marking Paints. A study of the interaction between paints and runway surfaces, as well as the durability of paints and their reaction to the environment. H. K. Kulshreshtha, A.K. Chaturvedi. HRIS 34. ACTIVE

(12) Removal of Rubber Deposits on Runways. To determine the suitability of removing the rubber-bitumen scum from runway surfaces or to provide a friction course. P. S. Sandhawalia, H. K. Kulshreshtha. HRIS 40. ACTIVE

New Projects

(14) Airport Pavement Evaluation. To devise a method for evaluating in-situ properties of materials to calculate residual strength and present functional life of pavements for the spectrum of aircraft. P. Sandhawalia, H. Bhatia, H. Kulshrestha. HRIS 24. ACTIVE

(15) Validation Tests for IAAI Mathematical Model. A validation test of the IAAI mathematical model where the properties of pavement materials were determined in the laboratory and used as input to the mathematical model. P. Sandhawalia, H. Bhatia, H. Kulshrestha. HRIS 24. COMPLETE

New Projects

42. (16) Measurement of In Situ Strains. To measure actual state of strain and determine influence of material, type of load, temperature and other forces on stresses and strains rather than depending exclusively on mathematical theories and assumptions. H. Kulshrestha. HRIS 24. ACTIVE

(17) Fibre Reinforced Concrete Pavement. To design a modified mixer for manufacture of fibre reinforced concrete which improves fatigue and strength characteristics. H. Kulshrestha, N. Raghvendra, L. Rattan. HRIS 32. ACTIVE

(18) Paraffin Wax Content in Bitumen. A study to find the acceptable limits of wax content in bitumen to prevent porosity and accelerated oxidation. H. Kulshrestha, H. Bhatia. HRIS 31. ACTIVE

44. MOTILAL NEHRU REGIONAL COLLEGE: Allahabad, Uttar Pradesh

(1) Study of Soil Deformation as a Time Dependent Process. An evaluation of soil deformation as a time dependent variable. M. S. Tripathi, A. V. Jalota. HRIS 61. ACTIVE

(2) Study of Seepage Through Different Permeable Media. To determine seepage pattern of water through soils of different permeability. K. K. Chaturvedi, A. V. Jalota. HRIS 63. ACTIVE

(3) Dynamic Behavior of Space Framed Structures. To formulate a relation between two and three dimensional shear wall structural stiffness through a concept of multiplying factor and to observe the stiffening effect of space shear wall on this factor. S. K. Duggal, Y. P. Gupta, B. Natain. HRIS 25. ACTIVE

(4) Skew Girder Bridges. To make a comparison between an experimental model and different methods of theoretical analysis. S. K. Jaiswal, B. Natrain, R. Agrawal. HRIS 25. ACTIVE

(5) Dynamic Response of Circular Plate on Elastic Foundation. To study the behavior of these plates under various loading conditions. K. Kamal, B. Narain, Y. Nath. HRIS 62. ACTIVE

(6) Strength Anisotropy and Thixotropy Studies of Expansive Soils. To determine these strengths with the help of laboratory vane shear test. R.K. Sribastava, B. K. Sahu, A. V. Jalota. HRIS 61. ACTIVE

(7) Critical Study of Various Methods of Determination of Cation Exchange Capacity of Natural Clays. A comparison study of the different methods for this determination. A. K. Chaudhary, B. K. Sahu. HRIS 61. ACTIVE

45. COLLEGE OF ENGINEERING, GUINDY: Madras 600025

(3) An Attempt to Find the Capacity of Roads by Linear Programming Technique. A study of capacity of Madras urban arterials using this technique. Traffic Engineering Department. HRIS 55. ACTIVE

46. NATIONAL TRAFFIC PLANNING AND AUTOMATION CENTRE: Sreekanteswaram, Trivandrum 695023

(1) Optimization of Bus Transport at District Level. To evolve a suitable concept for improving the operations of bus transport, keeping in view the competing demands of rural population and the need for ensuring optimum economic rural development. N. S. Srinivasan, D. Sanyal. HRIS 11. ACTIVE

46. (2) Planning of Road Network at District Level in Relation to Rural Economic Development. To evolve a methodology of this planning, keeping in view the level of economic activities, socio-economic conditions, anticipated developments. N. S. Srinivasan, D. Sanyal, S. Muthuswamy. HRIS 12. ACTIVE

(3) Guidelines for the Design of Intersections at Grade. To evolve geometric design standards to suit the mixed traffic conditions of India. N.S. Srinivasan, D. Sanyal,Jaidev. HRIS 21. ACTIVE

(4) Traffic Circulation in Central Business Districts under Mixed Traffic Conditions. To evolve suitable methods for improving this circulation. N. S. Srinivasan, A. Herur. HRIS 55. ACTIVE

(5) Methods of Effecting Fuel Economy in the Road Transport Sector. To evaluate the existing and anticipated fuel demand, the identity of availability problems in the gap between supply and demand and suggest conservation measures. N. S. Srinivasan. HRIS 17. ACTIVE

(6) Safety on Roads Under Mixed Traffic Conditions. To evaluate accident causes, develop countermeasures, evaluate vehicle performance and road user behavior. N. S. Srinivasan. HRIS 51. ACTIVE

(7) Intermodal Split of Traffic - A Case Study. To assess the system characteristics of road, rail and water transport, the factors influencing consumer choice and the probable capacities of each system and develop policies for development of each mode. N. S. Srinivasan, S. Muthuswamy. HRIS 55. ACTIVE

(8) Socioeconomic and Travel Characteristics in Medium Sized Cities. To evaluate the factors influencing the performance of trip makers and develop suitable models to simulate most probable behavior of the different socioeconomic groups. N. S. Srinivasan. HRIS 55. ACTIVE

(9) Optimization of Bus Transport in Medium Sized Cities. To develop a rational routing and scheduling pattern to improve service levels, increase utilization of fleet and crews and increase economic returns to the system. N. S. Srinivasan, A. Herwr. HRIS 16. ACTIVE

47. CIVIL ENGINEERING DEPARTMENT, FACULTY OF TECHNOLOGY AND ENGINEERING, UNIVERSITY OF BARODA: Baroda.

(1) Study of Pavement Distress at Road Intersections. To determine the causes of pronounced distress that occurs earlier at intersections than at other points. R. D. Bhatt, N. B. Parmer. HRIS 24. ACTIVE

(2) Pavement Unevenness Characteristics and Their Relationship to Pavement Distresses Under Different Conditions of Environment and Traffic. To develop a correlation between traffic and environmental conditions, such as drainage and seasonal variations, and the unevenness of pavements in three different sections of urban and rural highways. R. D. Bhatt, N. B. Parmer, O. H. Patel. HRIS 24. ACTIVE

(3) Framing Performance Criteria of Pavements with Respect to Time for Evaluation of Maintenance Standards. To correlate pavement field performance with respect to time and various periodic maintenance measures. D. M. Shah, G. B. Sompura. HRIS 24. ACTIVE

New Project

(4) Study of Properties of Reinforced Fiber Concrete. To conduct tests of reinforced fiber concrete under cube test, flexure test, and under fatigue loading. HRIS 32. Y. Joshi, N. Parmer, G. Sompura. HRIS 32. ACTIVE

48. TESTING AND RESEARCH INSTITUTE, PUBLIC WORKS DEPARTMENT: Patna, Bihar

(1) A Study of Bricks. To obtain bricks of uniform standard with compressive strength of 150 kg/cm^2. B. P. Singh, S. Rahman, P. Kumar, N. Shrivastava, P. K. Sinha. HRIS 34. ACTIVE

(2) Study of Sand in Bihar. Determine suitability of local river sand for construction. B. P. Singh, S. Rahman, U. Prakash. HRIS 35. ACTIVE

(3) Influence of Curing Period Before Compaction and Rest After Compaction on the Laboratory CBR Values of Soil Specimens. A study of the influence of curing period on CBR values of soils specimens. D. K. Sinha, S. Prakash, K. C. Bhagat. HRIS 62. ACTIVE

(4) Study of Black Cotton Soil as Foundation for Highway Pavement in Relation to Its Susceptibility to Shrinkage and Cracking on Desiccation and Swelling on Wetting. To determine ways to improve load carrying quality of this soil. D. K. Sinha, S. Prakash, P. S. Prasad, K. C. Bhagat. HRIS 62. ACTIVE

49. CEMENT RESEARCH INSTITUTE OF INDIA: M-10, South Extension-II, Ring Road, New Delhi 110049

New Projects

(5) Improvements in Performance and Durability of Concrete (Through Control of Porosity and Microstructure). To improve the performance and durability of concrete through control of the microstructure of the cement paste, modified by suitable chemical additives and latex emulsions. Staff. HRIS 32. ACTIVE

(6) Rapid Adjustments in Mix Proportion to Take Into Account Variability in Strength of Cement. To investigate the influence of variability of cement characteristics on the mix proportions of concrete of different grades and evolve a method of rapid adjustment. Staff. HRIS 32. ACTIVE

(7) Optimum Curing and Form Removal. To evolve guidelines for optimum curing and form removal considering characteristics of the cement, concrete mix proportions, different structural shapes and sizes and different hydrothermal conditions. Staff. HRIS 32. ACTIVE

(8) Evaluation of Quality of In-Place Concrete. To develop reliable methods of assessing the quality of in-place concrete. Staff. HRIS 32. ACTIVE

(9) Field Application of Steel Fibre Reinforced Concrete for Airfields. To compare two bays of steel fibre reinforced concrete of different specifications and another of conventional specifications at Delhi Airport. Staff. HRIS 32. ACTIVE

50. PUBLIC WORKS DEPARTMENT, B&R, RAJASTHAN: Jacob Road, Jaipur, Rajasthan

(1) Study of Deflections of Road Pavement by Benkelman Beam. To correlate the deflections observed with the required overlay thickness. M. K. Saxes, A. Agarwal. HRIS 24. ACTIVE

(2) To Develop Data on the Growth of Highway Traffic in Different Regions for Different Categories of Roads. To determine factors of hourly, daily, monthly and seasonal variations and peak hour traffic as percentage of average daily traffic, trends in growth, composition and axles per commercial vehicle. B. L. Mathur. HRIS 55. ACTIVE

(3) Study of Spectrum of Axle Loads on Roads in Different Regions. A study of the distribution frequency of axle loads of commercial vehicles for rationalizing designs and streamlining policies about weights and dimensions of vehicles. B. L. Mathur. HRIS 55. ACTIVE

51. BUILDING AND ROADS RESEARCH LABORATORY: Rajgarh Road Hissar, Haryana

(1) Survey and Evaluation of Locally Available Materials. A survey and evaluation of locally available materials to provide data as to location and suitability for use in road pavements. HRIS 35. ACTIVE

(2) Study of Axle Load Spectrum. To determine frequency distribution of axle loads of commercial vehicles on different roads for design purposes and for streamlining policies on weight and dimensions of vehicles. HRIS 55. COMPLETE

(3) To Develop Data on the Growth of Traffic in Different Regions of Different Categories of Roads. To determine such factors as hourly and other periodic and seasonal variations in traffic averages, trends in growth, composition and number of axles per commercial vehicle. HRIS 55. ACTIVE

52. ALIGARH MUSLIM UNIVERSITY, Z.H. COLLEGE OF ENGINEERING AND TECHNOLOGY, DEPARTMENT OF CIVIL ENGINEERING: Aligarh 202001

New Project

(1) A Study of Compressibility Behavior of Sand and Silt-Clay Fraction Mixtures. To study the effect of silt clay fraction on the compressibility behavior of sandy soil and the effect of fines on the void ratio of well graded and uniformly graded sands. M. Haroon, S. Salahuddin, F. Ahmad. HRIS 64. COMPLETE

53. REGIONAL INSTITUTE OF TECHNOLOGY: Jamshedpur-831014

New Project

(1) Vertical Sand Drains for Highway and Airfield Embankments. To test the suitability of various types of sand drains for different types of Indian soils, especially expansive soils, and develop improved theories for vertical sand drains. A. Mirajgaoker, K. Agarwal, R. Singh. HRIS 63. (Citations) ACTIVE

54. REGIONAL ENGINEERING COLLEGE, DEPARTMENT OF CIVIL ENGINEERING: Rourkela 769008 Orissa

New Project

(1) Shear Strength of R. C. Bridge Articulations. To study shear failure of thirty-four articulated reinforced concrete beams having varying percentages of web reinforcement, longitudinal steel and different shear span to depth ratios. B. Jena, K. Jain. HRIS 25. (Citations) ACTIVE

55. CALICUT REGIONAL ENGINEERING COLLEGE: Calicut, Kerala

New Project

(1) Traffic Speed in a Congested City. To model traffic speed with the factors of influence as obtained in Calicut City and reporting that the major influencing factor affecting traffic speed is the speed of slow moving vehicles per metre width of roadway. P. Mony, B. Nagaraj, K. Subramonia Iyer. HRIS 55. (Citations) COMPLETE

(2) Factors Affecting the Route Performance of Suburban Bus Operation - A Case Study. A review of the drawbacks of the existing systems of reliability measurement for estimating the reliability of public bus transport and an indication of changes required to ensure better serviceability. B. Nagaraj, R. Ranganathan, K. Subramonia Iyer. HRIS 55. (Citations) COMPLETE

INDONESIA

Resurvey - 1980

Ir. Isbandi

The 1980 resurvey of Indonesia was reported by Ir. Isbandi, Secretary, Directorate General of Highways. The report list 47 projects, two for the first time. Three projects are shown to be complete.

1. DEPARTMENT OF PUBLIC WORKS, DIRECTORATE GENERAL OF HIGHWAYS: Jalan Pattimura 20, Kebayoran Baru, Jakarta

   a. Indonesian Road Research Institute (IRRI): Jalan Raya Timur 264, P.O. Box 298 Bandung

      (1) Rock Asphalt (Buton Asphalt) in Road Paving. To determine economical and suitable methods of using rock asphalt from the island of Buton (30-40% bitumen) in road pavements. M. Hadi. HRIS 31. ACTIVE

      (2) Correlation Between CBR Values and Deflection. Field deflection tests on pavements using the Benkelman Beam together with laboratory tests on the subgrade soil are being made in an attempt to correlate deflection behavior with CBR values. M. Hadi. HRIS 24. ACTIVE

      (4) Processing of Buton Rock Asphalt. To produce a processed rock asphalt with a fixed bitumen content, is easy to transport, has quick curing time, and is not slippery. M. Hadi, S. Handi, T. Aristono, E. Mulyadi. HRIS 31. ACTIVE

      (7) Lime Piles Stabilization. To develop procedures for soil stabilization by use of lime-filled hand-bored holes in dirt roads. M. Hadi, E. Mulyadi, B. Soemitroadi. HRIS 62. ACTIVE

      (10) Quarry Survey. A field survey of existing and potential quarry sites for programming of local-materials construction. Staff. HRIS 35. ACTIVE

      (11) Geological Failure. A study of landslides along State highways from the standpoint of geological science. Staff. HRIS 63. ACTIVE

      (12) Development of Traffic Sign. Development of a new traffic sign more suitable to present left-hand driving. Staff. HRIS 54. ACTIVE

      (14) Pavement Design and Construction. Policy and techniques in the development and use of Buton Asphalt, together with development of the most appropriate methods of design and construction over poorly consolidated soils with high water tables. Staff. HRIS 24. ACTIVE

      (15) Maintenance of Roads and Bridges. Development of appropriate methods and criteria for maintenance needs including provisions for overlays together with specifications for surface treatments and premixed bituminous materials. Staff. HRIS 40. ACTIVE

      (18) Highway Planning Traffic Engineering Road Safety. Speed flow relationships to determine the effects of the mixed character of road traffic on highway capacity, together with the establishment of an effective system of reporting and analyzing data on road accidents, and improvement in techniques for determining location and standards of rural roads. Staff. HRIS 55. ACTIVE

      (19) Investigation on the Interrelationships Between Toll Road and Regional Development. To determine a research methodology and modeling in the process of proposed landuse for implementing toll-way road networks. R. Maris. HRIS 15. COMPLETE

1. a. (20) Investigation on Vehicular Load and Transportation Economics. Establish relationships between vehicles, road and transportation economics. W. Ajie. HRIS 15. ACTIVE

(21) Road Drainage Investigation. To find the relationship between rainfall and waterway crossing of the road. Soemartono, S. Soelastri. HRIS 22. ACTIVE

(22) Study of Road Performance Using the Benkelman Beam. To determine the critical deflection for Indonesian roads and establish overlay design charts, as well as determine residual service life. R. Sastramihardja. HRIS 24. ACTIVE

(23) Study of Benkelman Beam Computerization. To make a system analysis and computerize the Benkelman Beam inventory data. R. Maris. HRIS 24. ACTIVE

(24) Investigation on Corrosion Resistance Problem, from Either Technical or Economic Point of View. To prepare a manual on the corrosion problem, especially the effects of corrosion media upon corrosion speed, and the protection on steel structures. Soehardono, I. Nurdin. IRRI in cooperation with University of Jakarta. HRIS 25. ACTIVE

(25) Study on the Design and Construction Standard Specifications of a Composite Bridge. To obtain consistency in the use of specifications for composite bridges in design and construction. Soehardono, M. Kusnadi. IRRI in cooperation with Bandung Institute of Technology. HRIS 25. ACTIVE

(26) Study of Bridge Construction of Spans Longer than 100 Meters. To prepare a manual on bridge construction methods, and an evaluation of same. Soehardono, IRRI. HRIS 25. ACTIVE

(27) Study of Bridge Construction Development, Spans of 5 to 20 meters. To develop standards for design and construction of such bridges. Soehardono, IRRI. HRIS 25. ACTIVE

(28) Study on Timber Bridge. To prepare standard specifications and a manual of design and construction. Soehardono, Soewarno, IRRI, in cooperation with Gajah Mada University. HRIS 25. COMPLETE

(29) Application of Butas Asphalt Appropriate with the Qualities Available in Indonesia. To develop specifications for the use of this asphalt in accordance with its properties and mix materials available in Indonesia. M. Halil, IRRI. HRIS 31. ACTIVE

(30) Investigation on Road Traffic Capacity and Service Quality. Development of a road capacity manual suitable for conditions in Indonesia. A. Darmawan, IRRI. HRIS 55. ACTIVE

(31) Investigation on Bandung Super Crash Program. To develop a report for traffic data on Bandung arterial roads, especially volumes on daily and weekly basis. A. Darmawan, IRRI. HRIS 55. COMPLETE

(33) Asphalt Concrete Investigation. To determine the correlations of various mixes as related to asphaltic concrete qualities. R. Sastramihardja, IRRI. HRIS 31. ACTIVE

(34) Soil Compaction by Means of Vibration. To develop specifications for soil compaction using vibratory equipment (rollers) for various constructions. A. Thalib, IRRI. HRIS 62. ACTIVE

(39) Basic Planning and Control for Main Road Intersections. To make flow models for main road intersections. A. Darmawan. HRIS 55. ACTIVE

1. a. (40) Road Technical Criteria for New Residence Development. To develop technical model for road network for new residential developments. W. Wahyuadjie. HRIS 21. ACTIVE

(41) Study of Road User Characteristics. To provide an analysis of road user characteristics in connection with modeling traffic control systems and road networks. HRIS 54. ACTIVE

(42) Observation of Use of Grass as Slope Protection. To observe use of Japanese grass for possible slope protection (against erosion). E. Sumardi. HRIS 23.

New Projects

(43) Appropriate Pavement Evaluation Method. A method most appropriate to Indonesian condition, adaptable for supporting road handling programs. Staff of Highway Engineers Division. HRIS 24. ACTIVE

(44) The Substitution of Buton Asphalt Flux. To seek substitute materials for buton asphalt flux, particularly of non petroleum components. Staff of Highway Engineers Division. HRIS 31. ACTIVE

b. Directorate of Planning: Jalan Pattimura 20, Kebayoran Baru, Jakarta

(1) Long Range Comprehensive Highway Planning Study. A study based on characteristics of Indonesian regional development, covering all sectors involved. Staff. HRIS 12. ACTIVE

(2) Study on Vehicle Weights. Combined study of vehicle weights and dimensions, and road user charges to determine financial contribution to be made by various classes of vehicles toward construction and maintenance costs. Staff. HRIS 15. ACTIVE

(3) Development of the Indonesian Construction Industry. Studies designed to produce realistic and practical recommendations for development of highway engineering and construction industries. Staff. HRIS 33. ACTIVE

(4) Development of Provincial Department of Public Works Study. Survey of operational functions of provincial departments to assess capabilities to carry out programs and to design measures to improve management and operations. Staff. HRIS 11. ACTIVE

(5) Tollway System Study. To determine a system of tollways and the possibilities of establishing a highway corporation. Staff. HRIS 11. ACTIVE

(6) Jakarta, Medan and Surabaya Urban Transportation Study. Study of road networks in these cities and proposed land use patterns interrelated to transportation patterns. Staff. HRIS 11. ACTIVE

(8) Use of "BUTAS" for Paving. Development of methods for the economic use of a natural rock asphalt in cold-mix road surfacing by addition of asphalt cement and using local semi-mechanized construction practices. Staff. HRIS 31. ACTIVE

(9) Betterment Program. An investigation of existing roads to determine an upgrading program to accommodate the increasing traffic. Staff. HRIS 16. ACTIVE

(11) Urban Arterial System. A study of the feasibility of urban arterial systems in several cities on the State highway system, in order to overcome traffic jams. Staff. HRIS 54. ACTIVE

(13) Final Design of State Highways. Preparation of the final engineering design standards for state highways to be constructed in several parts of the country. Staff. HRIS 21. ACTIVE

1. b. (14) Study and Examination of Supply System of Hire Leasing Plant for Heavy Equipment. To establish capital investment plan for heavy equipment define policy on leasing of equipment facilities, and improve utilization of resources. Staff. HRIS 41. ACTIVE

(15) Surabaya, Bandung, and Medan Area Highway Development Study. To define a regional highway network within and between these cities so as to provide good accessibility for the region. Staff. HRIS 12. ACTIVE

(16) Jakarta-Merak Highway Financial Study. Financial evaluation study of the route as a toll road. Staff. HRIS 14. ACTIVE

(17) Rural Road Development Study in Provinces of Aceh, West and East Nusa Tenggara, and Yogyakarta. To develop road network concept for this area and anticipate future transportation needs. Staff. HRIS 12. ACTIVE

(18) Study of Prefabrication System for Small Bridge Replacement Program. To study technical and economic feasibility of using prefabrication for small bridge replacement or reconstruction. Staff. HRIS 25. ACTIVE

(19) Study for Determining Standard Types of Highway Bridges. To define standard types of highway bridges so as to standardize bridge structures. Staff. HRIS 25. ACTIVE

IRAQ

Supplementary Survey - 1980

Abdul Wahab El-Mufti

The 1980 supplementary survey of Iraw was reported by Mr. Abdul Wahab El-Mufti President, State Organization of Roads and Bridges, and list four projects, none of which is shown to be complete.

2. NATIONAL CENTER FOR CONSTRUCTION LABORATORIES, MINISTRY OF HOUSING AND RECONSTRUCTION: Moosa Bin Naseer Square, Tel-Mohamad, Baghdad.

(4) Trial Embankment in Talha-Medaina Road. To find most convenient location to connect Madina town with Road No. 6, and to reduce number bridges. Building Research Establishment, England. HRIS 21. ACTIVE

(5) Using Sulphur as a Partial Substitute of Asphalt in Pavement. An experiment to improve the binding capacity, tensile strength, flexibility and stability of asphalt pavement by addition of sulphur. The Sulphur Institute, U.S.A. HRIS 34. ACTIVE

(6) Common Ways of Fixing Soil to Improve It. Improving the soil properties by increasing its bearing capacity, limiting changes in its size and strength caused by other factors. Staff. HRIS 62. ACTIVE

9. COLLEGE OF ENGINEERING, DEPARTMENT OF CIVIL ENGINEERING, UNIVERSITY OF BASRAH: Basrah.

(1) Stabilization of Sub-Base Soil in Southern Iraq with Different Admixtures. A study to improve the poor bearing quality of some soils in southern Iraq by addition of locally available admixtures such as sand or by products of petroleum refining. H. Saeedy, J. Judycki, R. Venkataramani. HRIS 62. ACTIVE

IRELAND

Resurvey - 1980

The 1980 resurvey in Ireland was conducted by the IRRD. A total of 78 projects is reported, 16 for the first time. Of the total 17 are shown to be complete. Project reports were transmitted to IRF by the British Transport and Road Research Laboratory, the English language documentation center for IRRD.

1. NATIONAL UNIVERSITY OF IRELAND: 49 Merrion Square, Dublin 2

a. University College, Dublin, Department of Civil Engineering: Merrion Street, Dublin 2

(7) Shrinkage Characteristics of Peat. To establish a quantitative method of forecasting the occurrence of deep cracks and fissures in peat banks and roads which are subject to drying. E. T. Hanrahan. HRIS 61. IRRD 602712. ACTIVE

(8) Development of a Probabilistic Shopping Model. To enable evaluation of currently used models, investigation of the use of imprecise data and of traffic problems caused by shopping centers. M.J. MacNicholas. HRIS 55. IRRD 602726. ACTIVE

(9) Transport System Simulation. Study by computer model of motorway behavior from radial catchment to city center considering pertinent factors and benefits of an exclusive bus lane. M.J. MacNicholas. HRIS 16. IRRD 602711. ACTIVE

(10) Optimal Surface Dressing Policy. To determine optimum policies for use of aggregates and surfacings to minimize skidding. M.J. MacNicholas, J. Lynch. HRIS 24. IRRD 602710. COMPLETE

(11) Wear and Polishing of Road Aggregates. Field and laboratory tests to investigate wear and polishing of various Irish aggregates. M.J. MacNicholas, P.A. MacNeill. HRIS 35. IRRD 602714. COMPLETE

(12) Characteristics of Glacial Soils for Road Purposes. Study of glacial processes and the geotechnical characteristics of the soils. E.T. Hanrahan. HRIS 61. IRRD 604969. ACTIVE

New Projects

(13) Vacuum Treatment of Soft Soils. The investigation will determine whether the use of slotted PVC (used as vertical consolidation-acceleration devices) tubes will overcome the handicap, previously encountered with vacuum dewatering methods, in that only the surface layers of the soft ground were being adequately dewatered. E. Hanrahan. HRIS 63. IRRD 607310. (Citations) ACTIVE

(14) Stress-Strain - Time Behavior of Peats and Soft Soils. To evaluate and forecast the magnitude and rate of deformation of soft soils under load, together with the consequential changes in soil properties. E. Hanrahan. HRIS 63. IRRD 607311. (Citations) ACTIVE

(15) Subsoil Drainage by Wells and Trenches. An analysis of the effect of drainage, by wells and trenches, on the properties of the soil in road subgrades. E. Hanrahan. HRIS 63. IRRD 607312. (Citations) ACTIVE

c. University College, Galway: Galway

(9) Traffic Generation at Building Categories. Modeling trips generated at local buildings, institutions, factories and shopping centers. M.J. Brennan. HRIS 55. IRRD 602728. (Citations) ACTIVE

1. c. (11) Catering for Cyclists. An investigation of cyclist accidents and travel patterns in Galway City, and examination of the feasibility of providing improved facilities such as cycle ways and cycle tracks. M.J. Brennan. HRIS 51. IRRD 605499. (Citations) COMPLETE

e. University College, Cork, Department of Civil Engineering: Cork

(11) Relationship Between Transport and Telecommunications. To quantify and model transport and telecommunications pattern of private sector companies and determine possible modifications of them in an increasing energy cost situation. D. O'Cinneide. HRIS 17. IRRD 604970. COMPLETE

(12) Traffic Restraint in Urban Areas. Study of alternative methods for traffic restraint with emphasis on parking control. D. O'Cinneide. HRIS 54. IRRD 604971. (Citations) ACTIVE

(13) Trip Generation by Land Use. Study of the trip generation and modal split characteristics of residential, commercial and industrial land uses. D. O'Cinneide. HRIS 55. IRRD 604972. (Citations) ACTIVE

New Projects

(14) Strength Properties of Rocks Containing Well Defined Planes of Weakness. Triaxial testing will be used to measure strength data for correlation with theoretical predictions. DMF ORR. HRIS 63. IRRD 607313. ACTIVE

(15) The Relation Between Transportation and Telecommunication by Trip Category. To quantify and model the relationship between transport and telecommunications for different trip categories. D. O'Cinneide. HRIS 54. IRRD 607314. ACTIVE

(16) Interactive Computer Graphics Aided Decision Design of Prestressed Concrete Beams. To develop a library of program modules for computer graphics aided decision design of prestressed concrete beams. Investigator (s) not named. HRIS 25. IRRD 607315. ACTIVE

2. UNIVERSITY OF DUBLIN: Trinity College, Dublin 2

a. Engineering School: Same address.

(14) Numerical Solution of Flow Equations for Axisymmetrical Loading on Surface of a Viscous Continuum. To find a solution to flow equations of highly viscous materials. T.E. Glynn. HRIS 31. IRRD 602716. ACTIVE

(15) A Study of Environmental Factors Involved in Design of Flexible Pavements. Consideration of pavement analysis, material properties in repeated loading tests and theoretical analysis with finite element computer program. R. W. Kirwin, E. R. Farroil, M. Maher. HRIS 24. IRRD 602715. ACTIVE

(17) Correlation of Bituminous Testing Methods. Correlation of dynamic techniques for evaluating the deformation characteristics of bituminous materials, including repeated loading triaxial tests, beam/flexure under pulsed loading, forced vibration and ultrasonic tests. T.E. Glynn. HRIS 31. IRRD 603586. (Citations) ACTIVE

(18) Tensile Strength of Reinforced Micro-Concrete. An evaluation of the influence of reinforcing mesh configuration on tensile strength of micro-concrete. T.E. Glynn, M.Z. Salihi. HRIS 32. IRRD 603587. COMPLETE

2. a. (19) Further Investigations Toward a Rational Design Method for Flexible Pavements. A project to draw together the various facets of research in order to produce a rational method of design for flexible pavements, including the development of a computer program which will yield the stresses and elastic strains in a pavement and the load induced permanent deformation after a given number of wheel passages. R.W. Kirwan, T.E. Glynn, M.S. Snaith. HRIS 24. IRRD 603588. (Citations) ACTIVE

(20) Shrinkage Characteristics of Cement Stabilized Little Hampton Brick Earth. Studies of the effects of varying percentages of cement with various waxing and curing periods. M. Loh. HRIS 62. IRRD 604973. COMPLETE

(21) Structural Simulation and Optimization of Flexible Pavements by Multilayer Thick Plate Theory. To develop a computer program using linear approximation of the theory of multilayer plates on elastic foundation, for optimization of layer thickness with respect to structural adequacy and construction costs. T. E. Glynn, J. G. Byrne, L.J. Finn. HRIS 24. IRRD 605489. ACTIVE

6. THE AGRICULTURAL INSTITUTE (An Foras Taluntais): 33 Merrion Road, Ballsbridge, Dublin 4

a. National Soil Survey: Same address

(1) Soil Survey, Classification and Mapping. To make an inventory of the soil resources in Ireland to identify and characterize the different soils, to map their distribution and to evaluate their use potential. M.J. Gardner. HRIS 61. IRRD 602705. (Citations) ACTIVE

8. NATIONAL INSTITUTE FOR PHYSICAL PLANNING AND CONSTRUCTION RESEARCH (An Foras Forbartha): St. Martin's House, Waterloo Road, Dublin 4

(15) Traffic Safety Factors in Design and Layout of Road Junctions. To examine detailed records of accidents occurring at road junctions and develop safety criteria for junction design. F. Crowley. HRIS 21. IRRD 602722. ACTIVE

(28) Road Design Manual: Pavements. To make recommendations on pavement design, materials, construction methods, control and testing. J.P.M. Sheedy, S. Davett. HRIS 24. IRRD 602717. ACTIVE

(37) Gravel in Road Construction. To study and classify gravels in Ireland as to properties and performance. J.P.M. Sheedy, S. Davett, G.A. Bonner. HRIS 35. IRRD 602719. (Citations) ACTIVE

(40) The Influence of Asphaltic Cements on the Resistance to Skidding of Rolled Asphalt Wearing Courses. To compare resistance to skidding of surfaces with 50/50 lake asphalt/petroleum bitumen and commercial petroleum bitumens. J.P.M. Sheedy. HRIS 31. IRRD 602718. (Citations) ACTIVE

(42) Coated Chippings for Rolled Asphalt Wearing Courses. The effect of rate of spread of chippings on skid resistance and gravel performance. J.P.M. Sheedy. HRIS 24. IRRD 602727. (Citations) ACTIVE

(48) Systematic Skid Resistance Measurement Program. Organization of a systematic skid resistance testing program based on requirements of local authorities, locations which exhibit a high incidence of wet road skidding accidents, and research on the relation between surface characteristics, side-ways force coefficient, and incidence of accidents. F. Crowley. HRIS 24. IRRD 600277. (Citations) ACTIVE

8. (55) Dublin Traffic Speed Survey. Investigation of the relationship between accident severity and speed parameters in city traffic. T. Fuller. HRIS 54. IRRD 601491. INACTIVE

(60) Resistance to Skidding of Asphaltic Concrete. To assess the durability and resistance to skidding of Lees-designed asphaltic concrete (Delugrip) under conditions of heavy traffic. J.P. M. Sheedy, C.J. Lycett. HRIS 24. IRRD 602701. (Citations) ACTIVE

(65) Methods of Assessing Road Pavement Conditions. To develop techniques for measurement and numerical assessment of the condition of road pavements for application to Irish road and traffic conditions. J.P.M. Sheedy, T.M. Jermyn. HRIS 24. IRRD 602723. ACTIVE

(66) Road Marking Materials. Testing of thermoplastic and pre-formed line markings to identify most suitable presently available and assessing need for future research. C. J. Lycett. HRIS 34. IRRD 602729. ACTIVE

(67) Effect of Temperature on Pavement Strength. To study the relationship between deflection and temperature in bituminous paving materials. J.P. M. Sheedy, T.M. Jermyn. HRIS 24. IRRD 602730. ACTIVE

(70) Strength of Flexible Road Pavements. To establish deflection criteria for indicating strength of flexible pavements. J.P. M. Sheedy, T.M. Jermyn. HRIS 24. IRRD 602733. (Citations) ACTIVE

(71) Strengthening of Flexible Road Pavements. To study the effect of new surfacing overlays on strength of pavements using the deflection beam. J.P.M. Sheedy, T.M. Jermyn. HRIS 24. IRRD 602734. ACTIVE

(73) Change in Road Friction Levels with Age of Road Surface. Sideways force coefficient values at various speeds are being measured on selected road sections to detect the effect of age and traffic intensity on the skid resistance of the road surface. F. Crowley. HRIS 24. IRRD 603580. ACTIVE

(74) Computer Application in Roadway Design. The development of a software package to enable low cost remote terminals to be used in the investigation of road alignment alternatives when a computer is employed on road design using the ICES Roadway Design program. D. Borland. HRIS 21. IRRD 603581. (Citations) COMPLETE

(81) Axle Loads of Commercial Vehicles. Measurement of axle loads at selected locations in cooperation with local authorities. J.P. Sheedy, T.H. Jermyn. HRIS 55. IRRD 604096. (Citations) ACTIVE

(87) Development of a Portable Speed Meter for Unattended Operation at Remote Sites. Design of portable speed meter using road loops. B. Keogh. HRIS 55. IRRD 604102. ACTIVE

(89) Vehicle Height Analyser. Development of an apparatus to measure and classify heights of moving vehicles, for portable use. A.J. Curran. HRIS 55. IRRD 604974. ACTIVE

(90) Accidents at Pelican Crossings in Dublin. Investigation of pedestrian accidents at crossings converted to Pelican operation. R. Hearne, M. Golden, M. Staunton. HRIS 51. IRRD 604975. (Citations) ACTIVE

(91) Accident Reporting Levels in Ireland. Investigation of proportion of accidents not reported to police by using hospital and ambulance record comparisons. T. Fuller, R. Hearne. HRIS 51. IRRD 604976. (Citations) COMPLETE

8.	(92)	Traffic Signal Controllers. To develop a user manual to provide guidance on the installation, use, timing and maintenance of controllers for traffic actuated signals. M. Staunton. HRIS 54. IRRD 604977. (Citations)	ACTIVE
	(93)	Axle Loading Characteristics of Commercial Vehicles. To investigate the spectra of axle loadings on National Routes. A. J. Curran, P. McGuinness, J. Sheedy. HRIS 55. IRRD 604990. (Citations)	ACTIVE
	(94)	Traffic Flow on National Routes. To estimate the traffic flow on all sections for the year 1977. J. Devlin. HRIS 55. IRRD 604978. (Citations)	COMPLETE
	(95)	Road Works and Their Employment Content. To establish on-site, off-site and induced employment content for selected road projects. B. Feeney. HRIS 11. IRRD 604979. (Citations)	COMPLETE
	(96)	Visual and Aesthetic Guidelines in Road Design. To establish such guidelines for use in conjunction with geometric design standards. H. Hyde. HRIS 21. IRRD 604980.	ACTIVE
	(97)	Intersection Design Guidelines. Develop guidelines for at-grade intersections. J. Devlin, P. McGuinness. HRIS 21. IRRD 604981. (Citations)	COMPLETE
	(98)	Traffic Simulation by Computer. To develop programs for evaluating alternative layouts. D. Borland. HRIS 21. IRRD 604982. (Citations)	COMPLETE
	(99)	Road and Transport Statistics. To design and implement a traffic census to determine amount of travel by bicycle, car, van, bus and truck on individual sections of the National Road and the gross network in regional, county and urban roads. P. McGuinness, J. Devlin. HRIS 11. IRRD 605490.	ACTIVE
	(100)	Employment Content of Road Works. To estimate the onsite, offsite and induced employment for road maintenance and improvement works during 1977. P. McGuinness, B. Fenney. HRIS 11. IRRD 605491. (Citations)	COMPLETE
	(101)	Geophysical Techniques in Survey. A review of these techniques for subsurface surveying relative to new road alignments. P. McGuinness, D. Borland. HRIS 61. IRRD 605492. (Citations)	COMPLETE
	(103)	Conflict Studies as an Accident Prediction Method. To establish a prediction technique for accident risks based on film records from street and road conflicts. R. Hearne, M. Golden, F. Crowley. HRIS 51. IRRD 605494.	ACTIVE
	(104)	In-situ Measurement of Moisture Content. Field and laboratory investigation of selected methods. J.M. Golden. HRIS 62. IRRD 605495. (Citations)	ACTIVE
	(105)	Bituminous Binders for Surface Dressing. A field and laboratory investigation of cure rate, adhesion and other characteristics of surface dressing binders, and on viscosity of binders occurring during life of surface dressing. I.L. Jamieson. HRIS 31. IRRD 605496.	ACTIVE
	(106)	Design of Surface Dressing. To develop a design method for surface dressing on basis of local traffic, environmental and other factors. J.P.M. Sheedy, T.J. Holland, I.L. Jamieson. HRIS 24. IRRD 605497. (Citations)	ACTIVE
	(107)	Warrants for Pedestrian Facilities. To develop warrants for various types of pedestrian crossings, including Zebra Crossings, Pelican Crossings, traffic signal at intersections, grade separated crossings. M.1. Staunton. HRIS 54. IRRD 606472.	ACTIVE

IRELAND (contd)

8. (108) Scope Study on Energy Usage in Transport. To identify, in relation to energy use in road transportation, the adequacy of existing data; measures aimed at construction, including where and when; impact on other sectors; and feasibility of fuel reserve. B. Feeney. HRIS 17. IRRD 606473. COMPLETE

(109) Speed Limits Evaluation. To evaluate the possible savings in petrol which could be expected from the imposition of a range of general speed limits in rural areas on National Roads. P. McGuinness. HRIS 17. IRRD 606474. COMPLETE

(110) Seismic Survey. To evaluate seismic instrumentation as an aid to underground surveys for road purposes. D. Borland. HRIS 61. IRRD 606475. (Citations) COMPLETE

(111) Development of Vehicle Detector. To develop an infrared vehicle detector capable of spanning a 13 m wide road and to check on the operation of the detector for a range of weather conditions. B. Keogh. HRIS 54. IRRD 606476. (Citations) ACTIVE

(112) Direct Entry and Analysis of Accident Data Using a PDP-11 Computer. To develop a high-speed data entry computer analysis method giving tables and graphics from accident data of fatal and injury entered directly into the computer console entry unit. A.J. Curran. HRIS 51. IRRD 606477. ACTIVE

(113) Variation of Surface Friction Coefficient with Time of Year on Irish Roads. An investigation of the effects of these elements on friction characteristics as measured by SCRIM. A.J. Curran. HRIS 24. IRRD 606478. ACTIVE

New Projects

(114) Design Guidelines for Interchanges. To prepare guidelines and recommendations for the design of motorway interchanges and grade separated junctions. T.J. Holland. HRIS 25. IRRD 607049. ACTIVE

(115) Subsurface Surveying in Road Engineering using Electrical Resistivity. To examine available methods of resistivity surveying which seem suitable for use in a road engineering context, and test them on a number of geologic sites. B. Borland. HRIS 61. IRRD 607050. ACTIVE

(116) Methods of Car Ownership Forecasting. To review current trends in car ownership appropriate to car ownership models and forecast car ownership in year 2000. B.P. Feeney. HRIS 12. IRRD 607051. ACTIVE

(117) Structural Design Methods for New Flexible Road Pavements. To investigate the use of national pavement design procedures in predicting the standard performance of road pavement construction. J.M. Golden. HRIS 24. IRRD 607652. (Citations) ACTIVE

(118) Bituminous Mixed Materials. To study the comparitive performances of various types of bitumen macadam wearing courses. C.J. Lycett. HRIS 31. IRRD 607053. (Citations) ACTIVE

(119) Accident Analysis Determination of Specific Rural Roads. An investigation of accidents on rural roads carried out to determine the causes of the accidents. F. Crowley. HRIS 51. IRRD 607316. (Citations) ACTIVE

(120) Drink and Driving. To update previous surveys of blood alcohol levels of drivers and road fatalities following revision of drinking and driving laws. R. Hearne, M. Hickey. HRIS 52. IRRD 607317. ACTIVE

8. (121) Analysis of Accidents in Dublin City. To make a street by street analysis of accidents in Dublin City using the data recorded on the Garda Accident Report Forms. A. Curran. HRIS 51. IRRD 607318. ACTIVE

(122) Road Accident Facts 1979. An investigation to determine detailed classifications of accidents on Irish roads in 1979. R. Hearne. HRIS 51. IRRD 607319. (Citations) ACTIVE

(123) Assessing the Effectiveness of Seat Belt Legislation. An investigation to determine the effectiveness of the legislation introduced in February 1979 for the compulsory use of seat belts on the severity of injuries in road accidents. R. Hearne. HRIS 70. IRRD 607320. ACTIVE

10. DUBLIN CITY SERVICES, C.I.E.: O'Connell Street, Dublin

(2) Control of a Public Transport Fleet by Means of Automatic Vehicle Monitoring. To improve service by means of radio data transmission techniques. J.F. Higgins, B.M. Collins, B. Fitzgerald. HRIS 11. IRRD 602706. (Citations) ACTIVE

12. TRINITY COLLEGE DUBLIN: College Street, Dublin

(1) Data Bank of Material Properties for Mechanistical Design of Pavements. To prepare such a data bank for facilitating rational pavement design. T.E. Flynn, J.G. Byrne, L. Finn. HRIS 34. IRRD 606479. ACTIVE

ISRAEL

Supplementary Survey 1980

Mrs. Eva Sarelle

The 1980 survey of Israel was reported by Mrs. Eva Sarelle, Road Safety Center, Technion City. Sixty-five new projects are reported and six of them are completed.

1. TECHNION-ISRAEL INSTITUTE OF TECHNOLOGY (Technion-Machon Technology B'Israel): Technion City, P. O. Box 4910, Haifa

f. Transportation Research Institute: Same address.

(31) Principles of Dimensional Design for Rural Roads. To develop a model and adopt criteria for geometric combination of vertical and horizontal curves as dependent on travel safety and optical illusions. J. Craus, M. Livneh. HRIS 21. ACTIVE

(32) Development of a Sketch Planning Model for Calculating Traffic Flows. To develop an urban trip-distribution model sensitive to assumed land use alternatives and to the main characteristics of the transportation system. I. Blechman, U. Landau. HRIS 12. ACTIVE

(33) Thermostatically Controlled Cooling System for Heavy Vehicles. To develop a cooling system for heavy vehicles which will reduce fuel consumption and operating costs. A. Stotter, A. Yavnai. HRIS 53. ACTIVE

(34) Factors Affecting Deceleration Patterns at Intersection Approaches. An investigation of vehicle deceleration patterns and factors influencing them on approach to rural unsignalized intersections with emphasis on the role of road surface treatment. A. Hakkert, D. Zaidel. HRIS 54. ACTIVE

(35) Safety of Passengers in Commercial Vehicles. To evaluate passenger safety in commercial vehicles within specified engineering parameters. A. Stotter, E. Krasny. HRIS 51. ACTIVE

(36) Investigation of Alternative Mass Transportation Service Improvements: Methodology & Case Studies. To develop, test and evaluate analytical models for identifying low-capital transportation service improvements and service alternatives. D. Shefer, U. Landau. HRIS 12. ACTIVE

(37) Developing Accessibility Measures for Supply Points Based on Space Time Budgeting Concepts. To measure the accessibility of retail and service locations in the urban sphere for potential application to trip forecasting and transportation planning. U. Landau, J. Prashker. HRIS 12. ACTIVE

(38) An Investigation of Laboratory Compaction by Vibration for Highway and Airfield Base Materials. To develop a laboratory method of compaction by vibration by which the density and CBR strength of base materials can be forecasted in highway and airfield work when done by vibratory rollers. E. Shklarsky. HRIS 62. ACTIVE

(39) Investigation of Durability Properties of Bituminous Concrete for Highways and Airports. To determine the quantitative and qualitative relationships between the properties and proportion of mixture ingredients and durability of bituminous concrete under variable weather conditions. I. Ishai. HRIS 31. ACTIVE

(40) Criteria for Determination of Design Speed in Geometric Design of Urban Roads. To analyze the factors affecting determination of design speed in geometric design of urban roads. J. Craus. HRIS 55. ACTIVE

(41) An Analysis of Speed Data on Two-lane Rural Highways and Its Relationship to Design Speed. To analyze speed data and its relationship to design speeds and curvature, mean gradient, sight distance and width. A. Polus. HRIS 54. ACTIVE

1. f. (42) Curricula Requirements for Transportation Education in High Schools. To provide an overall understanding of the transportation system and provide requirements for becoming safe drivers. J. Craus. D. Zaidel. A. Katz. A. Moshel. HRIS 51. ACTIVE

(43) Investigations of Safety Aspects of Paved Shoulders in Rural Highways. To identify, define and analyze various types of shoulders on rural roads and their influence on single vehicle accidents. I. Ishai. C. F[illegible]on. HRIS 24. ACTIVE

(44) Turning Lanes on Single Lane Rural Highways. To identify intersections requiring special left or right turning lanes and establish guidelines for their design. J. Craus. Y. Ben-Yakov. HRIS 54. ACTIVE

(45) A Study of Highway Guide Signing. To investigate current guide signing and evaluate safety and traffic aspects of the various methods. A. Polus. HRIS 54. ACTIVE

(46) Carmelit Revisited. A follow-up of the 1974 user's survey to assess the role of the Carmelit in the total transport network of the city of Haifa. D. Shefer. M. Blecher. HRIS 12. ACTIVE

(47) Multi-Period Traffic Assignment Model for Urban Planning. To develop a mathematical traffic assignment model which will assess the consequences and impact of alternative transport policies and selected peak periods of use in the network. D. Shefer. C. Lombavski. HRIS 12. ACTIVE

(48) An Analytical Formulation of Household Trip-Making Behavior in Urban Areas: A Comparative Study. An analysis of variables which may have a causal effect on trip-making behavior, with the aim of developing an operational methodology to estimate and predict trip generation. D. Shefer. E. Daor. HRIS 12. ACTIVE

(49) Criteria for the Superelevation of Horizontal Curves. To develop the value of maximum superelevation of horizontal curves, and to relate superelevation and turning radius. J. Craus. M. Livneh. HRIS 21. ACTIVE

(50) Development of Economical Stabilization Methods for Subgrade and Highway Pavement Materials. To investigate use of cheap available materials and their stabilization and adaptation to local climatic and soil conditions. D. Zaslavsky. I. Ishai. L. Rosenberg. HRIS 62. ACTIVE

(51) Investigation of the Number and Range of Passenger Load Levels as a Main Criterion to Determine Bus Frequencies. To study load levels and bus frequencies based on actual passenger counts in buses and on simulation of passenger distribution. A. Ceder. Z. Rosental. HRIS 12. ACTIVE

(52) A Model for the Evaluation of Projects' Costs: Applications to the Construction and Transportation Fields. To estimate expected costs and budgets of operational projects prior to their actual implementation. A. Ceder. Y. Israeli. HRIS 11. ACTIVE

(53) Evaluation of Alternatives for Car Restraint Zones in City Centres. To investigate the impact of restraint schemes for vehicles in downtown areas coupled with improvements in public transit facilities. U. Landau. HRIS 12. ACTIVE

(54) Interactive Micro-Computer System for Demand Prediction and Traffic Assignment. To develop a system of interactive micro-computer programs which will assist in investigation of travel demand. J. Prashker. HRIS 12. ACTIVE

(55) Speed and Accident Analysis on the Haifa-Hadera Freeway. To collect speed distribution measurements and accident data for analysis to emphasize trends changes and relationships. D. Balasha. HRIS 51. ACTIVE

(56) Urban Land Allocation for Public Transportation Facilities. To estimate various land consuming activities related to public transportation. HRIS 13. ACTIVE

1. f. (57) Study of Vehicular Traffic During Periods of Closure of One Lane on A 2 Lane, 2-Way Road: Control of Traffic Lights and Optimal Closed Section Length. To examine operator's cost and costs from traffic delay and fuel consumption involved in constructing or maintaining a lane on 2-way roads. A. Ceder, O. Dressler. HRIS 54. COMPLETE

(58) Analysis of the Characteristics of Express Bus Services in Metropolitan Areas. To develop a level-of-service and economic evaluation model for express services along regular bus routes. U. Landau. HRIS 12. ACTIVE

2. TECHNION RESEARCH AND DEVELOPMENT FOUNDATION, LTD.: Technion City, Haifa

a. Road Safety Center: Same address.

(85) Development of Methods for Safety Improvements in Urban Areas: Rehabilitation of Residential Areas. To evaluate a safety improvement system in a residential neighborhood, including engineering and educational aspects. D. Balasha, A. Katz, D. Zaidel, A. Elgarishi, G. Bacar. HRIS 51. ACTIVE

(86) Means of Improving Police and Enforcement Methods. To improve the allocation of police resources on the roads to prevent accidents and to induce correct driving behavior. M. Becker, K. Menachmi. HRIS 51. ACTIVE

(87) Examination of the Safety Benefits of Engineering Improvements Using the "Before & After" Method. A study to gain insight into the effects of one engineering improvement or another on the level of safety at a certain site. D. Balasha, G. Bacar, M. Livneh. HRIS 51. ACTIVE

(88) The Effect of Special Lanes for Public Transport on Road Accidents. To examine the safety effect of a special lane in regard to pedestrian and vehicle accidents and recommend means for safety improvements in areas where special lanes exist. A. Ceder, L. Guttmann. HRIS 54. ACTIVE

(89) Evaluating Safety & Auxiliary Measures During Repair Work in Urban Areas. To examine the safety aspects of urban roads during maintenance and repair and to recommend improvements in warning devices for drivers and pedestrians. A. Ceder, L. Guttmann. HRIS 51. ACTIVE

(90) Injuries to Drivers and Passengers of Agricultural Tractors Involved in Road Accidents. To analyze tractor accidents, examine whether safety accessories exist on tractors and make recommendations for improving safety features on tractors. Y. Shinar, A. Katz. HRIS 53. ACTIVE

(91) Investigation of Factors Influencing the Decrease in Number of Road Accidents in 1979. To examine whether there is any statistical significance in a decrease in accidents and an increase in publicity in road safety. A. Hakkert. HRIS 51. ACTIVE

(92) Investigation and Improvement of Safety Aspects in Traffic Signal Operation. To examine the conflicts and problems in the control and direction of drivers and pedestrians at intersections or signalized crossings. D. Zaidel, D. Balasha. HRIS 54. ACTIVE

(93) Safety Aspects Related to Location of Schools. To formulate criteria for safe location of schools in urban areas and evaluate safety arrangements for children coming and going to school. D. Balasha, A. Katz. HRIS 51. ACTIVE

(94) Evaluation of Medical Examinations for Elderly Drivers. An assessment of the program to give periodic medical examination to drivers over 65 to determine how effective and useful the tests are and to gauge cooperation of drivers. A. Elgarishi, A. Katz. HRIS 52. ACTIVE

2. a. (95) Evaluation of On-the-Spot Multi-Disciplinary Accident Investigation Teams. To evaluate the feasibility of creating an on-the-spot multi-disciplinary accident investigation team in Israel. A. Hakkert. HRIS 51. ACTIVE

(96) Criteria for Evaluating Annual Vehicle Licensing Tests. To determine new criteria for evaluating the annual licensing system now in effect and make recommendations for its improvement. M. Becker. HRIS 70. ACTIVE

(97) Mandatory Use of Vehicle Accessories: Development of a General Methodology for Cost/Benefit Analysis. To develop a methodology for primary evaluation of cost vs. benefit for a certain accessories needed for each vehicle. D. Mahalel. HRIS 53. ACTIVE

(98) Statistical Survey for Locating Vulnerable Areas in Buses. A study to locate those areas of a bus where most injuries occur to aid in initiating engineering improvements in bus structure design and in raising the safety factor for prevention or reduction of injury severity to passengers. Y. Shinar. A. Katz. HRIS 51. ACTIVE

(99) Revision of Traffic Regulations Relating to the Vehicle, Its Parts and Accessories. To reevaluate all standards and regulations relating to the vehicle itself, parts, safety accessories, maintenance and service work and general vehicle operation. Y. Shinar. HRIS 53. ACTIVE

9. ISRAEL INSTITUTE OF TRANSPORTATION PLANNING AND RESEARCH: Rehov Ehad Haam 14, Tel Aviv

(17) Information System for Vehicle Standardization. To develop a computerized information system which will include the technical specifications on all makes and types of vehicles in use in Israel. Y. Price. HRIS 11. FUTURE

(18) Rural Roads Study in Four Provinces in Ecuador. To develop a methodology for feasibility and evaluation of planning for low cost rural roads in developing countries. G. Hashimshoni, J. Greenstein. HRIS 12. COMPLETE

(19) Technical Assistance to Transportation Planning Unit of Public Works Department of Quito, Ecuador. To train a transportation unit in a developing country in such aspects as transportation planning methods, feasibility studies, transport analysis, public transport, safety, licensing and vehicle regulations. G. Hashimshoni, A. Cohen. HRIS 12. ACTIVE

18. BEN GURION UNIVERSITY OF THE NEGEV: P. O. Box 2053, 84120, Beer-Sheva

(9) The Cognition of Intra-Urban Accessibility. To develop a cognitive measure for intra-urban accessibility to be integrated in location models of various facilities for medical treatment. E. Stern. HRIS 12. ACTIVE

(10) The Transportation Market in Judea and Samaria. To examine the organizational and economic structure of the Arab public transport market in Judea and Samaria and compare it to the public transport network in Israel. E. Stern. HRIS 15. ACTIVE

(11) A Cognitive Approach to Urban Route Selection. To develop a cognitive model for intra-urban route selection to be integrated in trip assignment exercises. E. Stern, Y. Tzelgov, A. Henig. HRIS 12. ACTIVE

(12) The Connectivity of Public Transport Networks. To develop a cognitive scalar for the public transport connection matrix and examine its utility with comparison of the usually used arbitrary scalar. E. Stern. HRIS 12. (Citations) COMPLETE

(13) Effects of Boredom on Road Sign Perception. To test driver recall of signs installed on long monotonous roads. A. Drory, D. Shinar. HRIS 52. ACTIVE

18. (14) Improving Signs in Road Repair Zones. A study of the number and spacing of warning signs to determine the deceleration effect with recommendations for an improved system. D. Shinar. HRIS 52. ACTIVE

(15) Characteristics of Safe Drivers. A study of drivers who have committed no violations for the past 10 years or more compared with problem drivers. Faculty. HRIS 52. ACTIVE

(16) A Visual Man-Machine Bus Scheduling Algorithm. A procedure for minimizing buses in a public transport company by determining when and where to insert deadheading trips. H. Stern, A. Ceder. HRIS 12. (Citations) ACTIVE

19. VEHICLE AND MECHANICAL TESTING LABORATORIES (Hamebeda L'Handasat Recev V'Mechonot): Technion City, Haifa

(18) Influence of Diesel Fuel on Bus Engine Emissions. To determine whether the quality of fuel used by buses has an influence on the amount of emission produced. U. Shochet. HRIS 17 ACTIVE

(19) Investigation of Braking Influence on Steering by Static Simulation. To develop a static simulation system which will reduce the test costs and provide accurate and reliable results of the effect of the braking system on steering of trucks and heavy vehicles. E. Krasny. HRIS 53. (Citations) COMPLETE

(20) Safety Improvements on Interurban Bus Body Design. To investigate danger spots in bus body design in order to recommend improved safety design measures. E. Krasny, Y. Shinar. HRIS 53. ACTIVE

20. MINISTRY OF TRANSPORT: Jerusalem

(4) Survey of Patterns of Commuting to Work 1980. A continuation of Part I, carried out in October, 1976, concerned with monthly car allotments and effect on usage in work trips. Staff. HRIS 12. ACTIVE

(5) Mapping Road Accident Locations in Urban Areas. Mapping of 10 additional cities to show high frequency accident locations. Staff. HRIS 51. ACTIVE

(6) Examination of Applicants to a Driving Instructor Course. To examine existing tests for driving instructors and evaluate their effectiveness. Staff. HRIS 52. FUTURE

(7) Short Run and Long Run Effects of Gasoline Prices in Israel. To study the effects of increases in the price of gasoline over short and long periods of time on travel behavior. N. Strauss, H. Yehoshua. HRIS 13. COMPLETE

27. NATAN TOMER ENGINEERING, LTD.: 80 Ben Gurion Boulevard, Tel Aviv

(2) Criteria for Coordination of Traffic Signals Between Intersections (Green Waves). To determine criteria for updating and supplementing existing guidelines on installation of "green waves" in traffic signal networks. Staff. HRIS 54. FUTURE

29. FALK INSTITUTE FOR ECONOMIC RESEARCH: Keren Hayesod 17, Jerusalem

(1) The Effects of Government Policy on the Vehicle Market. To consolidate the significance of existing Government policy and income with the size and scope of the vehicle market. Mansky. HRIS 13. FUTURE

30. ING. S. ERON: Ben Zvi Ave. 47, Ramat Gan

(1) Inspection and Design of Prototype for Israeli Made Bus. To plan a prototype bus design for regular production to supply the transport needs of Israel. S. Eron. HRIS 53. COMPLETE

31. **MATAN, LTD: Mane St. 4, Tel Aviv**

(1) Guidelines for Parking Design. To formulate guidelines for parking design as a means of control and unity for construction of car parks and residential parking areas. Staff. HRIS 21. FUTURE

ITALY

Supplementary Survey - 1980

Mario del Viscovo

The 1980 Survey of Italy was reported by Professor Mario del Viscovo, President of the Italian Road Federation. Twenty-three new projects were reported, four of which are shown to be complete.

3. AUTOMOBILE CLUB OF ITALY (Automobile Club d'Italia): Via Marsala 8, Rome

(68) Possible Methodology for the Prearranging of a National Count (Census) of Transport. A study of how appropriate legislation should be introduced, if necessary, for a national count of transport. M. Allione, V. Cao-Pinna, G. Cordella. HRIS 12. (Citations) COMPLETE

(69) Realization of Model Which Shows the Variability of Automotive Vehicles with Respect to the Cost of Fuel. The research will allow estimates of the increased cost of vehicle operation annually based on increases in fuel costs. G. Cordella. HRIS 17. SUSPENDED

(70) Inherent Problems to the Introduction of New Speed Limits. The study is concerned primarily with introduction of a 100 KPH speed limit, especially for commercial vehicles on the freeways. M. Vella, M. Allione, L. Quaglia. HRIS 54. COMPLETE

(71) Examination of the Contents of a Traffic Project Scheme. A critical review of various project parameters and their uses in the traffic plan considered. G. Cordella, M. Vella, L. Quaglia, M. Allione. HRIS 54. ACTIVE

(72) Study of Traffic for the City of Parma. A traffic study in Parma which will include suburban traffic, and its coordination with public transit. P. DeAngelis, F. Vitale, G. Cordella, A. Cupo-Pagano, M. Vella. HRIS 54. ACTIVE

(73) Study of Traffic for the City of Francavilla Fontana. A traffic study for vehicular control in the urban area of a country town. W. Valeriani, F. Vitale, M. Vella. HRIS 54. ACTIVE

(74) Project for a Traffic Plan of the City of Riva Del Garda. A traffic study of a country town taking into account peak traffic during the tourist season. W. Valeriani, F. Vitale. HRIS 54. COMPLETE

23. AUTOSTRADE S.P.A.: Via Antonio Nibby 10, 00161 Rome.

(8) Results of a Study of Traffic Volumes on the Autostrade Motorway Network. A 1978 study of traffic volumes on 288 segments of the Autostrade motorway network using an application of the Cluster Analysis. F. Salvatore, C. Biacco. HRIS 12. (Citations) COMPLETE

(9) Measurements of the Aggressiveness of Freight Traffic on Pavements - Nardo Experiment. Deflection studies of a test track pavement under truck loads with various axle combinations. M. Del Viscovo, G. F. Battiato, S. Boccassini, G. Camomilla, A. Naddeo, C. Verga. HRIS 24. ACTIVE

(10) Study of the Relationship between Accident Rates and Traffic Volumes. An attempt to correlate directly increases in accident rates with growths in daily traffic volumes. M. P. Dall'Asta, L. Ercoli. HRIS 51. ACTIVE

23. (11) Analysis of Causes of Motorway Accidents. A study to identify the most frequent causes of certain types of accidents recorded in 1979 on the Autostrade motorway network. S. Boccassini, F. Salvatore, C. Baiocco. HRIS 51. ACTIVE

24. ASSORENI - ASPHALT RESEARCH DIVISION: Via Fabina 1, Milano

(6) The Design of Asphalt Pavements by a Viscoelastic Approach Based on the Analysis of a Three Layer Paving System Subjected to Moving Loads. To develop a complete viscoelastic method for provision of fatigue behavior and permanent deformations in asphalt pavements. G. Battiato, G. Ronca, C. Verga. HRIS 24. (Citations) ACTIVE

(7) The Use of Fly Ash and Bottom Ash from Coal Burning in Road Construction in Italy. Laboratory and field investigations for use of fly and bottom ashes in flexible pavement layers. G. Battiato, C. Verga. HRIS 34. (Citations) ACTIVE

25. FIAT RESEARCH CENTER: Str. Torino 50, Orbassano, Torino.

(3) Car Ownership and Usage Model. A thorough analysis of car ownership and usage related to such parameters as income, multiple car ownership, mileage travelled, energy impact and effect of diesel engines in the carfleet. A. Frondaroli, P. Patrucco, G. Roncolini. HRIS 12. ACTIVE

(4) Urban Transportation Models. A set of models have been developed in cooperation with other Italian companies which synthesize traffic simulation, private and public, from a microscopic point of view. A. Frondaroli, G. Roncolini, M. Vallauri. HRIS 12. ACTIVE

(5) Traffic Lights Control System. Design of a new traffic light control system of hierocratic type having both strategic level and tactical level (local control) managed by microcomputers. A. Frondaroli, G. Roncolini, M. Vallauri. HRIS 54. (Citations) ACTIVE

26. MUNICIPAL TRANSPORTATION AGENCY (Azienda Trasporti Municipali; Servicio Studi): Foro Buonaparte 61, 20122 Milano

(1) Study on Traffic Circulation in the Historical Center (CBD) of Milan. A study to improve public transport circulation in the CBD of Milan. E. Minoni, G. Cobianchi. HRIS 55. ACTIVE

28. R&D LABORATORIES OF THE INDUSTRY DEPARTMENT OF ANSALDO: Via Nicola Lorenzi 8, Genoa

(1) Development of Electric Van for Urban Use. To develop an electric van for urban use with emphasis on choice of electric drive systems. D. Dalle Molle and Staff. HRIS 53. (Citations) ACTIVE

29. ECONOMIC SOCIAL RESEARCH INSTITUTE OF PIEDMONT (Instituto Ricerche Economico-Social, del Piemonte) Via Bogino 21, Torino

(1) Road System Policies in the Susa Valley Relative to the Opening of the Frejus Road Tunnel. A road system study in the Susa valley to protect its hydrogeological situation, and the maximum utilization of existing means of transport. C. Bertuglia and Staff. HRIS 12. ACTIVE

(2) Policies of the Development of the Regional Road System. To draw up a regional transport plan for the Region of Piedmont with indications of where action is needed and a suitable scale of priorities. C. Bertuglia and Staff. HRIS 12. ACTIVE

29. (3) Road System Policies for the Improvement of Links with the Sempione Pass. Study of a transport plan for the Region of Piedmont with provision for including differing transport systems where needed. C. Bertuglia and Staff. HRIS 12. ACTIVE

(4) A Sub-Regional Transportation Plan for the Sub-Regions Biella, Borgosesia, and Vercelli. To provide a transportation study of three sub-regions in the Piedmont which will include long distance buses, railways and road traffic and will identify further areas of needed research. C. Bertuglia and Staff. HRIS 12. ACTIVE

(5) Policies for a System of Bus Transport. A transportation studies which will identify needs of the highway transport system as well as budgetary reform for covering transport economic needs. C. Bertuglia and Staff. HRIS 16. ACTIVE

JAPAN

Resurvey - 1980

Sadamu Mino

The 1980 resurvey of Japan was conducted by Mr. Sadamu Mino. Executive Director Japan Road Association, who reported 984 projects, 146 for the first time. Of the total 208 are shown to be complete.

1. MINISTRY OF CONSTRUCTION: 2-1-3 Kasumigaseki, Chiyoda-ku, Tokyo

a. Public Works Research Institute: Asahi 1 banchi, Toyosato-machi, Tsukuba-gun Ibaraki-ken, 305

(1) Applications of an Electronic Computer to Highway Engineering. To develop computer programs for various types of research and testing. S. Kudo, S. Iwamatsu, K. Nakamura. HRIS 21. COMPLETE

(3) Geological Surveying Standards for Tunnels. To minimize differences to be adjusted between design and actual findings in field construction works. R. Okamoto. HRIS 61 COMPLETE

(4) Shock Fracture of Asphalt. To improve low temperature shock strength of asphalt pavement. Y. Mori, M. Suzuki. HRIS 31. COMPLETE

(17) To Develop a Knowledge of and Control Works for Landslides Along Route 112. To enable the planning of remedial works and the forecasting of landslides. M. Watari. HRIS 63. COMPLETE

(21) Grouting Materials. To obtain data on grouting techniques and determination of optimum injecting conditions. M. Makita. HRIS 62. COMPLETE

(26) Geological Survey for the Highway Across Tokyo Bay. To explore, by various methods, geological aspects of the area to select the best location for the highway. R. Okamato, K. Kuwahara, S. Kanwo. HRIS 61. ACTIVE

(27) Exposure Test of Paints. To identify, by exposure to the atmosphere the kind of paint best suited to bridge painting. Y. Mori. HRIS 34. ACTIVE

(28) Chemical Soil Stabilization. To test stabilization of Kanto loam with lime and lime and gypsum. M. Oba. HRIS 64. INACTIVE

(33) The Stability of Weak Rock Slopes. To establish a method for testing the stability of weak rock slopes. R. Okamoto, K. Kuwahara, A. Sato. HRIS 61. ACTIVE

(35) Application of Resinous Materials to Pavements. Study of the applicability of various types of resinous materials to non-skid surfacing and surfacing of bridge decks, including experiments on the fundamental properties of resinous materials and experiments on the properties of resin and gravel mixtures. M. Makita. HRIS 34. COMPLETE

(36) Experimental Study of Pavement Design with the Use of Automatically Steered Heavy Vehicles. Studies of the design of asphalt mixtures under heavy traffic, including the relations between the following factors: Laboratory tests and field performance; properties of materials and axle loads, pavement type and durability, construction and maintenance costs and maintenance design methods for pavements. T. Iijima, Y. Anzaki, I. Kojima. HRIS 24. ACTIVE

a. (37) Stability of Embankment Subjected to Earthquake Loadings. Earthquake engineering investigations to develop criteria for embankment design and to provide guidance in construction and reduction of hazards. K. Sawada, Y. Koga, T. Tanaka. HRIS 63. ACTIVE

1. a. (38) Reform of the Intersection. A study of the geometrical design of intersections and an analysis of traffic accidents and skid resistance of the surfacing. N. Kurimoto, M. Takagi, T. Mitsuda. HRIS 21. ACTIVE

(40) New Road Transportation System. Feasibility study of the conditions under which the New Road Transportation System could be applied to new towns in urban areas. HRIS 12. ACTIVE

(41) Maintenance of Road Pavement. To define factors indicating pavement serviceability, evaluate them, and establish levels corresponding to road traffic conditions and procedures for maintaining those levels. T. Iijima, H. Imai. HRIS 40. ACTIVE

(42) Resistance of Wearing Course to Abrasion and Polishing under Severe Traffic Conditions. A study of the effect of buses running under automatic control in narrow wheel tracks, and development of procedures to insure highly-resistant surfaces. T. Iijima, I. Kohima. HRIS 24. ACTIVE

(43) On Relaxation Zone by Tunnel Driving. A seismic prospective method for analyzing tunnel before lining, as well as a strain gage method. R. Okamoto, H. Sugahara, O. Takei. HRIS 63. COMPLETE

(44) Field Tests of Piles in Marine Environment. Field tests of several kinds of metal piles by exposure to sea water. M. Makita, Y. Mori. HRIS 62. ACTIVE

(45) Some Fundamental Studies of Corrosion and Protection for Marine Structures. An evaluation of reinforced concrete and steel resistance to corrosion in sea water. M. Makita, Y. Mori, K. Katawaki. HRIS 22. ACTIVE

(46) Experimental Research on Polymers for Pavement Material. Experiments conducted to determine better skid-resistant materials as well as bridge deck paving. M. Makita. HRIS 24. ACTIVE

(47) Some Studies of Color Paints for Honshu-Shikoku Bridges. Accelerated laboratory and field exposure tests on the fading of paint and durability of color. M. Makita, Y. Mori. HRIS 34. ACTIVE

(48) Field Tests of Protective System for Marine Structures. Investigation of corrosion of steels and concrete, with anodic protection in sea water and soils. M. Makita, Y. Mori. HRIS 34. ACTIVE

(49) On Cutting and Breaking Properties of Rocks. To develop standards and equipment for breaking rocks, including a microwave machine improvement. R. Okamoto, H. Sughara, O. Takei. HRIS 63. ACTIVE

(50) Improvements of Design and Practice of Concrete Pavement. An investigation of means to alleviate damage of winter traffic on concrete pavement. T. Yanagida, M. Kurenuma. HRIS 40. COMPLETE

(58) Simplified Direct Design System of Highway Structures. Use of the direct design system, which enables designers to obtain design data of structural configuration by simply giving basic design conditions, in attempts to simplify procedures in highway structure design. S. Iawmatsu, M. Matsuo, S. Kudo. HRIS 25. COMPLETE

(59) Earthquake Resistibility of Artificial Islands. To establish an evaluation methodology for the earthquake resistability of artificial islands and reclaimed lands. T. Iwasaki, F. Tatsuoka. HRIS 63. ACTIVE

(60) Earthquake Resistibility of Submerged Tunnels. Use of earthquake response analyses and model tests in establishing an earthquake design methodology for submerged tunnels. E. Kuribayashi, K. Kawashima. HRIS 63. ACTIVE

1. a. (61) Earthquake Resistibility of Large-Scale Bridges with Long Spans and Deep Foundations. Research on dynamic tests on structure-subsoil interaction and earthquake response analysis of large-scale bridges in order to establish earthquake design methodology for large-scale bridges with long spans and deep foundations. E. Kuribayashi, Y. Iida. HRIS 25. ACTIVE

(62) Earthquake Resistant Design of Major Structures. An evaluation of earthquake ground motions which should be considered in earthquake design of major structures. T. Iwasaki, S. Wakabayashi. HRIS 63. ACTIVE

(63) Earthquake Ground Motion and Dynamic Behavior of Subground. Through surveys and in-situ laboratory tests of previous seismic damage due to earthquakes, an evaluation of earthquake ground motion and dynamic behavior of the subground is made. T. Iwasaki, S. Wakabayashi, F. Tatsuoka. HRIS 63. ACTIVE

(64) Earthquake Resistibility of Highway Facilities. To rationalize seismic criteria of highway facilities to insure structural safety against earthquakes. E. Kuribayashi, Y. Iida. HRIS 63. ACTIVE

(65) Countermeasures Against Vibration Nuisance Caused by Traffic. Use of field surveys, laboratory tests and theoretical analyses in establishing effective countermeasures for mitigating traffic vibration nuisance. T. Iwasaki S. Wakabayashi, F. Tatsuoka. HRIS 17. ACTIVE

(66) Development of Soil Freezing Method. To develop a new method and equipment such as a freezing tube for soil freezing of soft foundations and clarify relationships between properties of frozen soil and soil condition. S. Chida, Y. Murao. HRIS 62. COMPLETE

(67) Improvement of Submarine Geological Survey. To establish improved methods of submarine geological survey required for cross-bay projects. R. Okamoto, K. Kuwahara, Y. Nakamura. HRIS 61. ACTIVE

(68) Collection, Storage and Retrieval of Technical Data About Road Construction. Study of a technical information system that can easily supply data about planning, designing and construction of roads from a computer. M. Ikemura. HRIS 11. COMPLETE

(69) Condition for Growth of Trees on Roadside. To establish standard criteria for evaluating tree growth used for roadside planting around Tokyo. M. Serizawa, J. Tanaka. HRIS 23. ACTIVE

(70) Design Method of Steel Framed Reinforced Concrete Structural Members. To establish design specifications for reinforced concrete bridge piers. M. Ohta Y. Koga. HRIS 25. (Citations) ACTIVE

(71) Aseismatic Design of Reinforced Concrete Structures. To establish designs for piers, abutments, retaining walls and other structures on basis of model tests and analytical studies. M. Ohta, H. Kawata. HRIS 25. ACTIVE

(72) Methodology of Evaluation of Seismic Safety of Road Facilities and on Aseismic Design Criteria of Highway Bridges. Study of the relationship between earthquake damages, topography, and geological factors; field and laboratory experiments; investigation on refuge, rescue and rehabilitation systems of past earthquakes. E. Kuribayashi, T. Tazaki, R. Hagiwara. HRIS 25. (Citations) ACTIVE

(73) Wind Resistant Design of Meiko-nishi Bridge. Study of self-excited oscillations vortex-excited oscillations, turbulence buffeting due to wind and buffeting due to the wake of the upstream bridge. N. Narita, K. Yamamoto, H. Sato. HRIS 25. ACTIVE

1. a. (74) Wind Resistant Design of the Yasaka Bridge. Study of self-excited oscillations vortex-excited oscillations, and buffeting due to wind turbulence. N. Narita. H. Sato. HRIS 25. COMPLETE

(75) Rationalization of Checking System for Design of Civil Engineering Structures. To develop a system with which engineers can check computer-designed structures. M. Ikemura. T. Kuyoshi. S. Kudo. Y. Nuratsubaki. HRIS 25 ACTIVE

(76) Use of Synthetic Polymer Materials for the Improvement of Asphalt Pavement. Investigations of rheological and mechanical properties of polymer-asphalts to obtain data in use of these anti-fluid, anti-abrasive and skid-resistant pavements. K. Terashima. H. Sakamoto. M. Makita. HRIS 31. (Citations) ACTIVE

(77) Improving the Method of Design of Cathodic Protection for Maritime Structures. Investigation of the effectiveness of cathodic protection for such structures as bridges and immersed tunnels against polluted, high velocity and normal sea water. K. Katawaki, Y. Mori, M. Makita. HRIS 34. ACTIVE

(78) Method of Repair of Concrete Structures. To find standard methods to repair concrete structures, such as injecting resinous material into cracks, strengthening existing members, etc., M. Ohta. K. Satori. HRIS 40. ACTIVE

(79) Research and Investigation on Road Traffic Noise and Air Pollution. To develop a method of predicting noise and its effect on residents, and pollution caused by automobile exhaust gas. K. Kanevasu. Y. Adachi, H. Nonaka. S. Kawashima. HRIS 17. ACTIVE

(80) Wind Tunnel Test for Traffic Safety. Study to determine most effective ways of assuring traffic safety under wind action, including such methods as alternation of topography, changing cut slope angle or wind barriers. N. Narita M. Katsuragi. HRIS 21. ACTIVE

(81) Stability of Natural and Cut Slopes. A study of rock cut slopes and rock falls. T. Yasue, Y. Hattori. M. Yoshikawa. HRIS 61. ACTIVE

(82) Earthquake Ground Motions and Dynamic Characteristics of Ground in Relation to the Tokyo Bay Crossing Highway. An investigation of the characteristics of design seismic force and dynamic characteristics of subsurface grounds in relation to the Crossing. T. Iwasaki. K. Kawashima, K. Tokida. HRIS 63 FUTURE

(83) Regional Impact Due to Road Improvement. To understand the impact of road construction using a model consisting of submodels: land utilization traffic, population, disaster prevention, and natural environment. M. Nakamura, A. Endo, Y. Nagato, T. Goto. HRIS 12. ACTIVE

(84) Impact to Region Caused by Public Works. Use of models covering such matters as policy, administration, local finance, production and capital formation, traffic, population, land use, housing and living environment to determine effects of public works such as river, road, housing and sewerage construction. M. Nakamura, A. Endo, Y. Nagato, T. Goto. HRIS 13 ACTIVE

(85) Preservation of Traffic on Roads. An investigation of the traffic capacity of roads as refuge, rescue and rehabilitation after earthquakes. E. Kuribayashi, T. Tazaki, R. Hagiwara. HRIS 11. ACTIVE

New Projects

(86) Evaluation of Highway Improvement Level. To establish an assessment procedure for highway improvement levels in terms of traffic serviceability and functional performance in classes of highway network. D. Fujita, A. Yamakawa, T. Urano, Y. Uramoto. HRIS 12. ACTIVE

1. a. (87) Developing a Forecasting Model of the Business Trip. To develop a forecasting model of business trips related to an economic activity based on analysis of current business trip traffic. M. Kishita, T. Urano. HRIS 13. ACTIVE

(88) Short Term Prediction of Road Traffic Variation. To develop a short-term prediction method based on analyses of data from the Automatic Vehicle Identification System. D. Fujita. HRIS 13. ACTIVE

(89) Study on Traffic Forecasting Methods. To investigate the applicability and accuracy of various traffic forecasting methods on a trunk road, including a forecasting model of freight traffic. D. Fujita, A. Yamakawa, M. Kishita. HRIS 13. ACTIVE

(90) Effects of Improvement of Roads on Fuel Consumption of Automobiles. To investigate whether improvement of roads has an effect on fuel consumption. H. Kanzaki, H. Yamada. HRIS 17. ACTIVE

(91) Dynamic Wheel Load on Bridge Expansion Joints Due to Vehicles. To determine magnitude of dynamic vertical and horizontal wheel loads on bridge expansion joints. K. Yamamoto, M. Katsuragi. HRIS 25. ACTIVE

(92) Maintenance of Traffic After Earthquake. To estimate traffic demand after an earthquake and research methodology to restore traffic. O. Yeda, T. Tazaki, R. Hagiwara. HRIS 40. ACTIVE

(93) Study on Foundation Works in the Vicinity of Existing Structures. To study problems with foundation works near existing structures when topography changes or structure is enlarged. Staff, Foundation Engineering Division. HRIS 63. ACTIVE

(94) Research on Seismicity of Road Embankments. To clarify damages to embankments from former earthquakes and develop procedure for future estimates of damages. Staff, Ground Vibration Division. HRIS 63. ACTIVE

(95) Testing and Investigation Concerning Rock Excavation Methods. To study ripping in hard rock and development of improved ripping equipment. Sh. Sawada, H. Ohta. HRIS 41. ACTIVE

(96) Non Blasting Methods of Tunnel Excavation. To study a method of breaking up rock with micro waves. Staff. HRIS 63. (Citations). ACTIVE

(97) Rationalization of the Methods of Shallow Water Geological Survey. Development and testing of underwater boring machine and comparison with seismic testing. H. Suguwara, Y. Nakamuru, F. Inazaki. HRIS 63. ACTIVE

(98) Rational Application of Slope Protections to Rock Slopes. To analyze stabilities of various rock slope protections. H. Suguwara, I. Hirano. HRIS 63. (Citations) ACTIVE

b. Public Works Research Institute, Chiba Branch: 4-12-52 Anagawa, Chiba-shi, Chiba

(6) The Bearing Capacity of Piles in Groups. To analyze the normal and horizontal bearing capacity for group piles in order to develop a rational design of pile foundation, with special reference to lateral resistance. HRIS 62. ACTIVE

(7) Ventilation in Tunnels. To develop fundamental data for planning and design in both field and model tests in laboratory. T. Konda, T. Furushou. HRIS 21. ACTIVE

(15) Means for Traffic Safety. To investigate various safety factors, including pavement surfaces, signs and signals, and guardrails. T. Matsuda, T. Kaji, M. Takagi. HRIS 51. ACTIVE

1. b. (23) Fundamental Research into Weak Soils. Analytical solutions of the sinking and deforming mechanisms and the dynamic behavior of weak soils and the development of testing processes and equipment necessary for these investigations. M. Yabe. K. Kutara. HRIS 64. ACTIVE

(37) The Aerodynamic Stability of Suspension Bridges. To study the aeroelastic characteristic of a suspension bridge with an extremely long span during a strong wind to determine a rational wind load and design of stiffening structures. N. Narita. K. Yamamoto. H. Soto. HRIS 25. ACTIVE

(51) Subaqueous Tunnels. To study and test methods of constructing trench type tunnels and excavation under highwater pressure. T. Konda. T. Mizutani. HRIS 33. COMPLETE

(54) Applicability of Soil Tests in Engineering Problems. To standardize field testing and improve testing equipment. K. Kutara. HRIS 62. ACTIVE

(55) Stabilization of Weak Foundations for Highway Embankment. To develop and establish a method of stability analysis of embankment foundations. M. Yabe. HRIS 62. ACTIVE

(56) Earth Pressure on Tunnels. To analyze the mechanisms of earth pressure by field and laboratory tests. T. Furushou. T. Konda. HRIS 63. ACTIVE

(58) Establishment of Standards for Survey. Design and Construction Works of Substructures. To develop design and construction standards for substructures. pile. caisson. footings. etc. K. Komada A. Yamakawa. HRIS 25. ACTIVE

(63) Skid Resistance of Various Road Surfaces. To determine coefficients for skid resistance. cornering force. and slip resistance by tests with a skid-test car. M. Ononda. N. Kuromoto. HRIS 24. ACTIVE

(64) Wind Resistance Design of Proposed Honshu-Shikoku Bridges. To determine the design wind velocity and to increase the rigidity of suspension bridges. N. Narita. H. Sato. HRIS 25. ACTIVE

(65) The Characteristics of Seismic Ground Motion. A comparison of weak and strong earthquakes and a study of the relation of subsoil conditions to seismic intensity. T. Okubo. T. Terashima. HRIS 63. INACTIVE

(68) Optimum Alignment of Highways. To explore. by use of a drawing simulator the human engineering factors affected by highway alignments. D. Fujita. HRIS 21. ACTIVE

(69) The Structural Design. Design Mixtures. and Construction Methods of Asphalt Pavements. To study. on full scale test pavements. the plastic flow. skidding resistance and performance of many mixtures. Y. Anzaki. I. Kojima. T. Iijima HRIS 24. ACTIVE

(71) Large Scale Tests of Subgrade and Subbase Courses. Performance tests of thermal stress. fatigue property and bearing capacity of soil cement mixtures with asphalt emulsion. S. Nagumo. T. Iijima. Y. Anzaki. HRIS 62. INACTIVE

(74) Test Pavement Study. Observation of test roads with various mixtures. materials. abrasive effects of chains. etc. T. Iijima. Y. Anzaki. I. Kojima. HRIS 24. ACTIVE

(75) The Structural Design of Cement Concrete Pavements. To test and analyze pavement sections with various soil-cement intermediate courses. Y. Anzaki T. Iijima. HRIS 24. INACTIVE

1. b. (77) Design and Construction Methods for Earth Retaining Structures. To improve retaining wall design. A. Shimazu. HRIS 62. ACTIVE

(81) Performance of Machinery for Foundation Construction. To test performance of various drill bits, roller, bite and drag, in drilling for pier construction. Y. Honda. HRIS 41. COMPLETE

(85) The Aerodynamic Stability of Cable-Stayed Girder Bridges. To establish a rational criteria for wind resistance design of such bridges. N. Narita M. Yamamoto, H. Sato. HRIS 25. ACTIVE

(99) Observed and Analytical Responses of Bridges, Dams and Embankments. A study of response accelerations and ground accelerations during strong earthquakes as observed by the Strong Motion Accelerometer as an aid in determining design criteria. E. Kuribayashi, T. Iwasaki and others. HRIS 63. ACTIVE

(100) Earthquake Resistance of Underground and Underwater Structures. Experimental and analytical studies of structures during earthquakes to determine the dynamic effects on large-scale bridge piers bedded on sea bottoms. E. Kuribayashi Y. Iida, F. Tatsuoka. HRIS 63. ACTIVE

(101) The Earthquake Resistant Design Criteria of Long Span and Deep Foundation Suspension and Other Bridges. Analytical and experimental studies by response analysis, and vibration tests to guide earthquake resistant design. E. Kuribayashi K. Kawashima, F. Tatsuoka. HRIS 25. ACTIVE

(104) The Operating Characteristics and Capacity on Grades and Intersections. Study of design criteria under various conditions including grades, sight distance, climbing lanes, intersections, etc. T. Mitsuda. HRIS 21, INACTIVE

(109) Investigations for Foundations of Honshu-Shikoku Connecting Bridge. Studies stress earthquake resistance design and soil bearing capacity. K. Komada A. Yamakawa. HRIS 63. ACTIVE

(112) Slope Designs for Cuttings and Embankments in Landslide Areas. To arrive at a safety coefficient for the slopes in cuts and fills where landslides may be expected. M. Watari. HRIS 21. COMPLETE

(113) Maintenance of Road Traffic in Snow Region. To improve traffic safety in the winter. C. Shimomura. HRIS 40. ACTIVE

(114) Methods of Construction for Landslide Areas. Behavior of landslides analyzed. A. Saka. HRIS 63. ACTIVE

(118) Stabilization and Protection of Slopes. Investigation of present practice of slope protection and evaluation of the stability of slopes in order to establish a design procedure for slope protection and stabilization. Y. Nakamura K. Kutara. HRIS 62. ACTIVE

(120) The Operation and Administration of Highways and Traffic. Collection of traffic data automatically in order to utilize highway networks effectively and provide pertinent information on guidance and control of traffic. D. Fujita. HRIS 54. ACTIVE

(121) The Automatic Design of Highways. To automate, as far as possible, the whole undertaking, from alignment design to the calculation of construction quantities. D. Fujita, T. Mitsuda, H. Takahashi. HRIS 21. ACTIVE

(123) A Factor Analysis of Traffic Accidents. To clarify the relation between traffic accidents and probable causes in order to construct safe highways. T. Matsuda T. Kaji. HRIS 51. ACTIVE

1. b. (130) Development of an Undersea Excavator. To develop a machine to excavate, balance-discharge, and dispose of soil steadily and economically in the construction of large scale undersea embankments. S. Sawada, H. Ohta, K. Yamada. HRIS 41. ACTIVE

(131) Ground Damage Due to Earthquakes. Development of a simple in-situ method to predict the degree of liquefaction of a given soil by large-scale vibration tests on a model of soft clayey soil, using a large-scale shaking table. Y. Sasaki, E. Taniguchi, Y. Koga. HRIS 63. ACTIVE

(132) Testing Dynamic Properties of Soils. Analysis of the dynamic behavior of soil structure under seismic force and traffic load, including consideration of loading intervals; repetition effect, magnitude of strain, and behavior of pore water; investigate the effect of dynamic loads using a dynamic triaxial compression apparatus and establish a standard testing method; investigate the distribution of earth and pore pressures and the law of similitude in an experimental soil structure model. Y. Sasaki, E. Taniguchi, Y. Koga. HRIS 63. ACTIVE

(133) Automatic Control for Construction Equipment. Simplification of construction equipment operating control by developing a bulldozer which will ensure blade control, engine control and running direction control. H. Okazaki, H. Komuro. HRIS 41. COMPLETE

(134) Noise and Vibration Caused by Construction Work. Study of the properties of noise and vibration caused by construction work development of a method to measure them and investigation of means for reducing their effects. S. Sawada, T. Kitigawara, H. Ohta, T. Sakai, R. Yoshida. HRIS 17. ACTIVE

(135) Air Pollution Around Vehicular Tunnels. Development of equipment and systems for purifying polluted air discharged from vehicular tunnels. K. Ichihara, T. Konda, T. Mizutami. HRIS 21. ACTIVE

(136) Characteristics of Driver Behavior as Regards Route Selection. Investigation of characteristics of driver behavior regarding route selection such as the number of routes a driver considers and factors that influence his selection. M. Matsui. HRIS 52. ACTIVE

(138) Dual Mode Bus System. Development of a bus that will run normally on city streets from residential to business areas, and on guideways with no operator. Y. Honda, H. Okazaki. HRIS 12. COMPLETE

(140) Ground Vibration Caused by Highway Traffic. An investigation of sources, characteristics, and countermeasures of ground vibrations. N. Narita, K. Yamamoto, M. Katsuragi. HRIS 17. ACTIVE

(141) Random Moving Load on Highway Bridges Induced by Vehicles. An investigation of the dynamic effect of moving loads on bridge decks. N. Narita, K. Yamamoto, M. Katsuragi HRIS 25. ACTIVE

(143) On the Reliability of Structures. A statistical treatment of the questions of the safety of structures. K. Yokoyama, M. Katsuragi. HRIS 25. COMPLETE

(145) Fatigue Design of Steel Plate Decks. To establish a fatigue design method for steel plate decks, including bibliographic survey, laboratory tests and field observations. T. Kunihiro, M. Fujiwara. HRIS 25. ACTIVE

(148) Load Factor Design Method for Bridge Superstructures. Involves statistical research on loads, strengths of structures, theoretical and experimental research on limit states such as unserviceability and collapse. T. Kunihiro, S. Saeki, M. Fujiwara. HRIS 25. COMPLETE

1. b. (151) Investigation of Traffic Capacity. Investigation of the upper limit of traffic volume from the viewpoint of driver's psychology and roadside inhabitants. D. Fujita. K. Takasaki. HRIS 55. ACTIVE

(152) Effects of Traffic and Roads on the Environment in Rural Areas. A study of the effect of road traffic on the rural environment, particularly the effect on plants. K. Kaneyasu, M. Hakamura. HRIS 23. ACTIVE

(155) Planning and Control of Construction Process. A computer simulation of the construction process, to be used for optimum decisions in planning and control. S. Chida. K. Kumagai. M. Aidi. HRIS 33. ACTIVE

(158) Safety in Construction Machinery. To investigate the safety and efficiency of operator-protecting devices on construction equipment. K. Yamada. S. Sawada. HRIS 41. ACTIVE

(159) Tunnel Lining. To improve tunnel lining technology mainly by large scale model tests. T. Konda, S. Hanaoka. HRIS 25. ACTIVE

(160) Mechanical Methods to Excavate and Melt Rock. To develop machinery to excavate and melt rocks, including ripping, drilling, use of microwaves, lasers, flame and atomic energy. Y. Honda, H. Okazaki. A. Ishizima. HRIS 41. COMPLETE

(161) Factor Analysis of Road Traffic Environment. A survey of people's consciousness about environmental factors of highway traffic and an analysis to define weights of these factors. K. Kaneyasu. M. Nakamura. HRIS 17. ACTIVE

(162) Traffic Guide Signs. An investigation to establish reasonable criteria for traffic guide signs which includes visibility, reasonable selection of place names, and systematic installation. N. Kurimoto. T. Kaji. K. Otomo. HRIS 54. ACTIVE

(163) Influence of Various Road Conditions on Drivers. Use of a specially designed road test car in determining the influence of various road conditions such as structures on the highway, geometric design and design and color of ancillary facilities on drivers. N. Kurimoto, M. Onoda. HRIS 52. ACTIVE

(164) Vehicle Fire in Tunnels. To investigate vehicle fires in tunnels in relation to fire control equipment and to establish design criteria for emergency equipment for road tunnels. T. Konda. S. Hanaoka. K. Horiuchi. M. Kimura. HRIS 21. ACTIVE

(165) Interception of Vibration Due to Traffic Load. Use of field observations and indoor tests in an investigation to clarify the relationship between the propagation and damping mechanism of ground vibration due to traffic load and soil condition, and to establish countermeasures for interception of vibration. Y. Sasaki. E. Taniguchi. HRIS 17. ACTIVE

(168) Development of Caisson Sinking Method. A study to develop a caisson sinking method for large and deep foundations, which involves excavation inside and below the caisson and methods of holding the caisson. S. Chida. M. Nakagaki. HRIS 25. COMPLETE

(169) Stabilization of Deep Layer of Soft Soil. Research to develop a new method of stabilizing deep layer muddy soil, the research including methods of mixing or injecting stabilizing admixtures such as quicklime and fly ash, and observation of the behavior of stabilized soil layers in various conditions. S. Chida. T. Kanezashi. HRIS 62. ACTIVE

1. b. (170) Compaction of Asphalt Pavement with Vibratory Compactor. Tests to determine the effect of a large vibratory compactor in terms of density, strength and smoothness of surface with respect to number of passes, frequency of vibration, speed of passing, and temperature of mixture, the aim being to establish standard practice for use of the compactor. S. Chida, M. Nakagaki. HRIS 41. COMPLETE

(171) Ground Vibration Caused by Highway Traffic. To predict the level of ground vibration caused by highway traffic and to find countermeasures. Staff. HRIS 17. COMPLETE

(172) Evaluation and Choice of Future Transport Modes. Analysis and comprehensive evaluation method study of users' choice of transport modes to establish a method of traffic planning suitable for regional characteristics and traffic demands. A. Ishido, D. Fujita, T. Maejima. HRIS 16. (Citations) ACTIVE

(173) New Transportation System: An Investigation of Safety Counter Measures. A comprehensive study of safety aspects of a new transportation system. T. Matsuda, M. Takagi, T. Matsuno. HRIS 51. INACTIVE

(174) Development of New Freight Transportation System. Develop method and equipment for freight traffic in urban area to improve traffic environment and establish desirable urban structure. A. Ishido, D. Fujita, T. Maejima. HRIS 13. ACTIVE

(175) Underground Conduit. To establish specification for design and construction of buried pipe, to examine earth pressure behavior. M. Yabe, Y. Motoda. HRIS 63. (Citations) ACTIVE

(176) Differential Settlement. To predict differential settlement of structures constructed on sea beds, such as embankment or trench tunnel. M. Yabe, Y. Motoda. HRIS 63. ACTIVE

(177) Embankment on Soft Ground. To find method of treatment for soft ground for construction of low embankments. M. Yabe, Y. Motoda. HRIS 62. (Citations) ACTIVE

(178) Slope Stability. To clarify mechanism of slope failure and develop method of predicting the failure, under water and noise conditions. M. Yabe, K. Kutar. HRIS 63. (Citations) ACTIVE

(179) Methodology of Evaluation for Earthquake Risk Potential. To prepare an earthquake damage mitigation program. I. Kuribayashi, T. Tazaki, T. Hadate. HRIS 63. (Citations) ACTIVE

(180) Aerodynamic Characteristics of Bridges. Development of wind resistant designs for flexible structures, such as long span bridges. Staff. HRIS 25. COMPLETE

(181) Attentuation of Traffic Vibration. To study wave propagation and means of isolating such waves. K. Sawada, E. Taniguchi. HRIS 17. COMPLETE

(182) Road Traffic Noise. To establish a prediction model of noise levels due to road traffic, and survey effects and durability of noise barriers. K. Kaneyasu, H. Nonaka. HRIS 17. ACTIVE

(183) Vegetation Analysis by Aerial Photographs. To establish a vegetation analysis method by means of aerial photographs. T. Tanaka. HRIS 21. ACTIVE

(184) Air Pollution Caused by Road Traffic. To establish a design standard of roads to minimize air pollution caused by road traffic. H. Mori, S. Kawashima. HRIS 17. ACTIVE

1. b. (185) Field Observations of Response of Bridges to Natural Wind. To find the characteristics of natural wind and response on bridges thereto by field observations of two bridges. K. Yamamoto. M. Katsuragi. H. Sato. HRIS 25. ACTIVE

(186) Research on Traffic-Induced Vibrations. Study of a method to estimate traffic-induced vibration and countermeasures to minimize its adverse effects on inhabitants along the road. K. Yamamoto. M. Katsurgi. HRIS 17. ACTIVE

(187) Dynamic Soil Properties at Honshu-Shikoku Bridge Sites. Research on dynamic soil properties by laboratory tests and application of the results to the earthquake response analysis of Honshu-Shikoku Bridge. HRIS 63. COMPLETE

(188) Earthquake Ground Motions for Major Structures. An evaluation of earthquake ground motions to be considered in design of major structures. T. Iawsaki S. Wakabayashi. K. Tokida. HRIS 63. ACTIVE

(189) Earthquake Ground Motion and Dynamic Behavior of Subsoils. Laboratory and field tests of previous seismic damage due to earthquakes for an evaluation of this motion and behavior. T. Iwasaki. F. Tatsuoka. K. Tokida. HRIS 63. ACTIVE

(190) Countermeasures Against Vibration Nuisance Caused by Traffic. To establish effective countermeasures for mitigating this nuisance. T. Iwasaki. S. Wakabayashi. HRIS 17 ACTIVE

(191) Observation of Strong Motion Earthquakes at Bridges, Dams and Embankments. Observations of response accelerations and grand accelerations during strong earthquakes as recorded at various structures. T. Iwasaki. S. Wakabayashi. HRIS 63. ACTIVE

(192) Measurement of Soil Strains during Strong Earthquakes. Study of the methods for measuring soil strains and measurement of soil strains during strong earthquakes. T. Iwasaki. S. Wakabayashi. HRIS 63. ACTIVE

(193) Earthquake Resistability of Subsoils. To establish an evaluation methodology for earthquake resistability of subsoils and reclaimed lands. T. Iwasaki F. Tatsuoka. K. Tokida. HRIS 63. ACTIVE

(194) Dynamic Interactions between Soils and Structures. Study of dynamic interactions between soils and structures due to liquefaction of the soils. T. Iwasaki. K. Tokida. HRIS 63. ACTIVE

(195) General Lateral Buckling of the Plate Girder Bridge. To evaluate lateral buckling strength of bridges with plate girders using full-scale models. S. Saeki. M. Kanai. HRIS 25. ACTIVE

(196) Load Carrying Capacity of Old Bridges and Repairing Methods. To set up standard method for estimating load capacity of old bridges, and determine effective methods to strengthen and repair them. S. Saeki. HRIS 25. COMPLETE

(197) Composite Steel Deck Truss. To establish design method for composite steel deck truss. S. Saeki. Y. Yamamoto. HRIS 25. COMPLETE

(198) Limit States of Steel Members. To clarify strength or deformation characteristics of steel bridges and evaluate basic limit states correctly for rationalizing design methods. S. Saeki. Y. Yamamoto. M. Kanai. HRIS 25. ACTIVE

(199) Evaluation of Road From Viewpoint of Traffic Safety. To examine road safety standards and methods of safety evaluation, and predict accident incidence. N. Kurimoto. T. Kaji. K. Otomo. HRIS 51. ACTIVE

1. b. (200) Use of Granulated Slag in Soil Stabilization. To compare granulated slag with other materials in backfill and embankment foundations, evaluate environmental effects, and investigate strength and permeability with lime additive and in cohesive soil. M. Yabe, K. Nishikawa. HRIS 62. COMPLETE

(201) Earthquake Response Analysis of Underground Structures. To investigate dynamic characteristics of soils and underground structures, and develop seismic design methods for such structures. E. Kuribayashi, T. Tazake T. Hadate. HRIS 63. ACTIVE

(202) Amplification Characteristics of Ground Motion in Subsoils. With regard to effect of ground conditions on seismic forces induced in structures, to determine amplification characteristics of ground, and to categorize and select ground conditions with respect to these characteristics. T. Iwasaki K. Kawashima, Y. Takagi. HRIS 63 ACTIVE

(203) Infrastructure for a New Transportation System. To determine design criteria for infrastructures for guideway bus systems and develop such structures. S. Saeki. HRIS 21. ACTIVE

c. Public Works Research Institute, Akabane Branch: 5-41-7 Shimo, Kita-ku, Tokyo

(1) Stability of Slopes. Studies on the preliminary soil survey for cut slopes and the stress-strain condition of deep layers, in order to establish a rational survey of planned slopes as well as effective countermeasures to prevent landslides. H. Fujita. HRIS 63. COMPLETE

(2) Slope Failures Due to Earthquakes. To develop rational design approach to stable slopes in earthquake areas. Staff. HRIS 63. COMPLETE

(3) Weathering Mechanism in Cut Slopes. To develop preliminary survey procedures for long cut slopes before excavation to clarify weathering mechanism of soil layers under slope surface. H. Fujita. HRIS 63. ACTIVE

f. Kinki Regional Construction Bureau: Otemaeno-cho, Higashi-ku, Osaka

(3) Effect of Chugoku Expressway. A study of how land utilization is effected by building a road through the Chugoku district, with use of aerial photographs now and in later years. HRIS 15. INACTIVE

(4) Study of Roadside Development Along Trunk Roads. To develop and improve process for planning trunk roads through an urbanizing area with special emphasis on consolidation of trunk roads and urbanizing environment. Staff. HRIS 13. ACTIVE

(5) Assessment System for Road Planning. To develop system for assessing environmental impact and considering local inhabitants' desires at time of route location. Staff. HRIS 17. ACTIVE

(6) Estimation of Future Traffic Volume. To develop a new technical method of estimating future traffic volume which explains the inter-dependence between traffic distribution and various kinds of economic activity indicators. Staff. HRIS 55. ACTIVE

(7) Survey of Impacts of Road Projects on Inhabitants. To analyze relation between bahavior of inhabitants and impacts of road projects from standpoint of social sciences, and find a way to settle disputes. Staff. HRIS 17. ACTIVE

(8) Study of Technical Method for Road Improvement Corresponding to the Road Function and Its Impact on the Environs. To develop a technical method to attain harmonious consolidation between trunk roads and their environs by identifying road functions and their impacts. HRIS 17. ACTIVE

1. f. (9) Traffic Model for Future Road Planning. To develop the model to be used for studying the desirable future road network in the Kinki Region, the model to be capable of distributing traffic volumes based on economic indices. HRIS 13. ACTIVE

(10) Relation Between Design Traffic Volume and Road Network Capacity. To investigate design vs. future traffic demand volume in Kyoto, Osaka, and Kobe. Second Planning Sec., Road Div. HRIS 55. ACTIVE

g. Construction Bureau: 2-1-3 Kasumigaseki, Chiyoda-ku, Tokyo

(1) Estimation of Future Traffic Volume within Chukyo Area. Assignment of traffic volumes expected in 1985 into a more complex network. O. Ueda. HRIS 55. ACTIVE

(2) Present Surface Condition of Non-Skid Pavement. A study of the stripping of asphalt by seepage water on non-skid pavements. H. Sasaki, R. Hosotani, A. Kondo. HRIS 24. ACTIVE

(6) Experimental Investigation on Earthpressure on Retaining Wall. Use of a cohesive soil as backfill to measure pressure, both horizontal and vertical, on a wall and the bearing force on the base. M. Fukoka, A. Akatsu S. Katagiri. HRIS 63. ACTIVE

(7) Improvement in Asphalt Mixtures for Surface Courses in Cold Regions. Laboratory and field tests to determine asphalt surface course mixtures which have better anti-abrasion and anti-skid properties. Mat. Testing Sec. HRIS 31. ACTIVE

(8) Snow-Free Road Signs. Consideration of structural design and material in efforts to develop road signs that can be effectively seen in snowy weather. T. Akazu, T. Agatsuma. HRIS 54. ACTIVE

(9) Development of a New Tunneling System. Studies of tunnels under construction for the purpose of developing a new labor-saving, safer and faster tunneling machine and method. Machinery Section. HRIS 41. ACTIVE

h. Niigata Experimental Laboratory: 1826 Nishihara 944 Arai-shi, Niigata-ken

(1) Decision of Critical Rainfall for Slopes. A study of critical rainfalls on dangerous slopes to provide greater safety to traffic. A. Sakai, A. Yamada. HRIS 22. ACTIVE

i. Kyushu Regional Construction Office: Higashi Kushihara-cho, 830 Kurume-shi, Fukuoka-ken

(1) Stability of SHIRASU (A Volcanic Ash Soil) Slope. A study of the characteristics of SHIRASU, to determine causes of failure, and find methods of stabilizing. T. Shima, N. Horita, S. Tanimoto. HRIS 62. ACTIVE

(2) Artificial Fine Aggregate for Asphalt Mixture. To study the applicability of several kinds of artificial fine aggregate for asphalt mixtures. Material Test Division. HRIS 35. ACTIVE

1. Kensetsu-Sho Shikoku Chiho Kensetsu Kyoku: 4-26-32 Fukuoka-cho, Takamatsu City

(1) Traffic System on the Islands of the Seto-inland Sea. An evaluation of present and future social and natural conditions of scattered islands if a proposed system of bridges is constructed to connect them. W. Tanimoto, K. Noda. HRIS 13. ACTIVE

1. m. Tohoku Gijusu Jimusho: 6-1, 3 chome, Sakuragi, Tagajo-shi, Miyagi-ken

(1) Development of Spiral Pile. Experimentally testing several types of screw piles and development of machinery, so as to eliminate noise and vibration of conventional pile drivers. T. Akasak, N. Takahashi. HRIS 41. (Citations) ACTIVE

(2) Disposition of High-Snowdrift and High-Snowbank. To develop snow removal systems for use on national roads in high-snowdrift and snowbank sections. M. Kurihara, T. Adasada. HRIS 40. ACTIVE

(3) Economical Estimation of Snow Removal Machines. To find the best combination of snow removal machinery for national roads from an economic viewpoint. M. Kurihara, T. Iwamoto. HRIS 41. ACTIVE

(4) Development of the Snow-Removal Machine with Variable. To develop a rotary snowplow having a variable width. T. Akasaka, H. Sekion. HRIS 41. (Citations) ACTIVE

n. Hokuriku Technical Office, Regional Construction Bureau: Yamada, Kurosaki-cho, Nishikanbara-gun; Nigata

(1) Pavement in Cold and Snowy Regions. To ascertain types of asphalt pavement and binder courses resistant to abrasion and plastic flow in cold and snowy regions. First Material Testing Sec. HRIS 24. ACTIVE

(2) Study of the Preliminary Survey of Paved Road Condition. To predict future condition of the road failure by analyzing changes of the surface, using photographs and other data. Engineering Section. HRIS 24.(Citations) ACTIVE

New Project

(4) A study of Prevention Against Splash with Road Surface Water. To study countermeasures against splashed roadway water for protection of pedestrians. Staff, Machinery Section. HRIS 51, ACTIVE

o. Chubu Regional Construction Bureau: 2-5-1 Sannomaru, Naka-ku, Nagoya

(1) Growth of Street Trees. To investigate effect of soil on street tree roots in Nagoya and to recommend environmental conditions for street tree planting and maintenance. T. Osada, M. Murata, H. Wantanabe. HRIS 23. (Citations) ACTIVE

(2) Goods Circulation in Chukyo Metropolitan Area. A survey of this circulation in the area, incorporated with results of person trips to clarify people and goods movements as part of a comprehensive transportation plan. HRIS 55. ACTIVE

p. Shikoku Technical Office: 1545 Mure-cho, Kida-gun, Kagawa-ken

(1) Research on Plants on the Face of Slope. To determine adaptable surface conditions for growing plants and period for recovery of damaged plants. W. Tanimoto. HRIS 23. ACTIVE

(2) Research on Efficient Cutting Operation on Face of Slope. To find methods for cutting slopes and development of machines adaptable to the inclined plane. HRIS 33. ACTIVE

2. JAPAN PUBLIC HIGHWAY CORPORATION (Nihon Doro Kodan): 5-7-2 Kojimachi. Chiyoda-Ku Tokyo

a. Laboratory: 4-1 Tadao 1-Chome, Machida-shi, Tokyo

(10) Periodic Measurements of the Behavior of Flexible Pavements. Tests of temperature subgrade mixture, soil pressure, settlement, etc. made before and after opening to traffic, with instruments imbedded in pavement. N. Ogawa, M. Deguchi, Y. Miyaoka. HRIS 24. COMPLETE

(15) The Stability of Cut Slopes. To determine the relationship between type of cut slope failures and their treatment. S. Okuzono, H. Hameda, H. Miura. HRIS 62. ACTIVE

(26) Embankments on Soft Ground. To collect data on settlement taking place in embankments after being opened to traffic. K. Tsuchida, S. Kuwayama, K. Sato. HRIS 62. ACTIVE

(29) The Traffic Patterns in Cold Regions. To obtain basic data on traffic characteristics under winter driving conditions. K. Kitagawa M. Matsuo. HRIS 55. ACTIVE

(31) Rock Bolting in Tunnels. Tension force, anchor phenomena and stress are being tested in-situ. M. Yamamoto, I. Shimada. HRIS 63. COMPLETE

(34) The Skid Resistance of Road Surface. To determine a standard specification to control aggregates and mixes to increase skid resistance; also study of devices for measuring skid resistance. K. Kitagawa, Y. Kayama HRIS 24. ACTIVE

(36) The Behavior of Soils Under Repeated Loading. A laboratory study of tri-axial compression tests of soils, N. Ogawa. C. Tsuchiya. HRIS 63, COMPLETE

(39) Laboratory Tests on Abrasion of Cement Concrete Pavements. To find the relation between materials, proportions, placement conditions, abrasion resistant agents and the wearing of concrete pavements. K. Akai, T. Miyazaki, H. Muraki. HRIS 24. ACTIVE

(41) Studies on Pavement Structure by Means of Dynamic Loading in Test Pits. Investigations of fatigue characteristics of pavement structures under repeated loading using an electronically controlled wheel. S. Kawashima, I. Fukushima, M. Egushi. HRIS 24. ACTIVE

(50) Foundations on Slopes. Use of a model test and the finite element method to determine the relation between lateral bearing system and slope degree, bearing length cross sections, etc. S. Ishihara, H. Mori. HRIS 62. ACTIVE

(51) Change of the Properties of Bridges under Traffic Loads. Investigation of the change in dynamic properties of bridges under traffic load and of methods of analysis and the development of a method for measuring impact force. T. Kondo, M. Hasegawa, T. Kawahito. HRIS 25. COMPLETE

(52) Behavior of Bridge Footings during Earthquakes. A model test to simulate dynamic lateral load using a mechanical vibrator. T. Kondo, T. Arakawa. HRIS 63. COMPLETE

(53) Application of De-icing Chemicals to Highways. An investigation of various chemicals and their effect on metal corrosion, and vegetation, and to establish best practice for their use in de-icing roads and bridges. M. Inoue, K. Satori T. Kashima. HRIS 40. COMPLETE

2. a. (54) Expressway Accident Analysis. Development of a traffic accident analysis system that is expected to provide reference data for future expressway geometric design. Technical Department. HRIS 51. ACTIVE

(56) Fatigue Characteristics of Pavement Structures. Fatigue characteristics of pavements under repeated loads are investigated by application of dynamic loads to pavement structures on subgrades of various strengths with measurement of deflections and stresses. HRIS 24. ACTIVE

(58) An Experimental Study of Structures. A study to clarify the influence of lateral flow of soft ground on substructures and to develop a rational method of design. A. Hasegawa, M. Maseki, Y. Hiyama. HRIS 62. COMPLETE

(60) Fatigue Strength of Reinforced Concrete Structure. Examination of fatigue mechanisms and methods to improve fatigue properties. Y. Iioka, T. Higai, T. Toyofuke. HRIS 25. (Citations) COMPLETE

(62) Study of Pavement Performance and Its Valuation. Evaluation of structural distress from surface conditions and development of high-speed automatic measuring equipment. K. Seto, Y. Kawashima. HRIS 24. COMPLETE

(63) Development of the Structural Design Procedures for Pavement Rehabilitation. Laboratory tests with wheel tracking machine and traffic simulation machine and fatigue characteristics of bituminous overlays. S. Kawashima, I. Fukushima, T. Kashamishi. HRIS 24. ACTIVE

(64) Study of Traffic Noise on Expressway. To investigate propogation characteristics of traffic noise and develop more accurate prediction formulas. S. Hattori, N. Kishi, Y. Matsumura, H. Kuroki. HRIS 17. ACTIVE

(65) Studies of Gas Diffusion from Roadways. Develop or improve prediction formulas for air pollution on various roadway configurations. S. Hattori, Y. Matsuoka, Y. Yamauchi, H. Nogae. HRIS 17. ACTIVE

(68) Study of the Base Course in the Field. Study of base course characteristics by means of repeated loadings in the field on two types of bases, cement stabilized and granular stabilized. K. Noda, K. Ozawa, S. Kawashima, I. Fukushima, M. Eguchi. HRIS 62. ACTIVE

(69) Study on the Method to Evaluate Soundness of Reinforced Concrete Slabs of Steel Bridges. To survey crack density, reinforcement strain, slab deflection, etc. for development of method of evaluating soundness of reinforced concrete slabs. T. Akai, S. Okawa, F. Koga. HRIS 25. COMPLETE

(70) Fatigue Test of Concrete Slabs. To study factors affecting durability of reinforced concrete slabs, viz.: movement of concentrated loads, use of expansive admixtures, and fatigue of grating. T. Akai, N. Fujita, Y. Kimura. HRIS 25. ACTIVE

New Projects

(71) Study on Repairing Methods on Failed Slopes. To find alternate repair methods by investigation of repairs on prior slope failures. Staff. The cut slope section. HRIS 21. ACTIVE

(72) Static and Fatigue Behavior of Concrete. Hinge Made of Steel Bars Arranged in I Shape. Testing to determine if bars carried in a straight plane through a joint will provide discontinuity - T. Akai, N. Fujita, T. Kadotani, Y. Kimura. HRIS 25. ACTIVE

(73) A Study of the Pile Foundation with Different Length. An examination of the load distribution and torsion on varying length piles bearing on sloping underground strata. Sh. Ishihara, H. Mori. HRIS 25. ACTIVE

2. a. (74) A Study on Strength and Toughness of the Bearing Support at the Earthquake. To establish bearing design criteria under earthquake conditions. Sh. Ishihara. M. Nakamura. HRIS 25. ACTIVE

(75) Investigation on Joints of Cast-in-Place and Precast Block Concrete Structures. Static and fatigue testing to develop improved joints under earthquake conditions. T. Akai. N. Fujita. T. Kadotani. Y. Kimura. HRIS 25. ACTIVE

(76) Study on the Reuse Method of the Asphalt Mixture to be Scrapped. Developing an in-place reworking method for asphaltic mixes. Y. Kawashima I. Fukushima K. Nogami. HRIS 31. ACTIVE

(77) On Influence of De-Icing Chlorides on Concrete Slabs and Other Structures. A study of the effect of chlorides on reinforced concrete, with and without asphalt cover. T. Akai. T. Miyazaki. F. Koga. H. Muraki. HRIS 32. ACTIVE

(78) A Study on Toughness of Steel Reinforced Concrete Structures. Static and dynamic tests for ultimate strength and toughness will be made on steel fiber reinforced concrete. Sh. Ishihara. M. Nakamura, H. Sakai. HRIS 32. ACTIVE

(79) A Study on Compressibility of Weathered Soft Rocks. To avoid long time settlements in embankments of highly slaked rocks, compressibility tests and evaluation of quality control during construction will be made. T. Watanabe Sh. Ichimura. Sh. Imagawa. HRIS 33. ACTIVE

b. Planning Department: No. 7-2. 5-chome. Kojimachi. Chiyoda-ku. Tokyo

(5) Study of the Factors Affecting Cut Slope Failures and Its Application to the Design of Slope Protection. Study of the failures on existing cut slopes being studied to develop an effective slope protection design. K. Kato. S. Okubo. HRIS 62. (Citations) ACTIVE

c. Electrical Communication Section: No. 1-13. 1 chome. Shimbashi. Minato-ku. Tokyo

(1) Inductive Mobile Radio System. To develop an inductive radio system using a cable along the highway - an approach to automatic steering control. M. Kusunoki. H. Mizutani. HRIS 54. ACTIVE

h. Osaka Construction Bureau: 1-8 Nishinagahori-Kita-dori. Nishi-ku. Osaka

(2) Development of a New Traffic Diversion Equation Having Various Explanatory Factors. To develop a new diversion equation which involves factors of convenience safety. comfort as relates to user's acceptance of toll facilities. H. Noda. Y. Tsujimoto. HRIS 55. FUTURE

i. Tokyo First Construction Bureau: 28 Nishikubo-Sakuragawacho. Minato-ku Tokyo

(1) Practical Method of Computing Travel Time on Roads and Streets. To develop a practical method for computing travel time between two points based on road conditions such as lanes. width. grade. traffic signalized intersections. speed limit. etc. F. Fujisawa. M. Hachiga. Y. Tsujimoto. HRIS 55. FUTURE

(2) A Method of Evaluating Highway Projects. To establish a method of evaluating impacts of highway projects on the system users. the system non-users and the operating agency. including environmental pollution. as well as the function and significance of the project in its community effects. R. Fujisawa. K. Hitomi. H. Aoki. HRIS 15. FUTURE

2. j. Fukuoka Construction Bureau: 2-13-7 Tenjin, Chuo-ku, Fukuoka

(1) Calibration of the "Toll/Time Difference Diversion Curves". A study of traffic volumes, origin and destination surveys and vehicle travelling conditions on six toll roads where rates were raised to determine if these curves need revising as a result. M. Fujita, Y. Tsujimo. HRIS 55 FUTURE

3. EXPRESS HIGHWAY RESEARCH FOUNDATION OF JAPAN (Kosokudoro Chosa Kai): 1-1-13, Shimashi, Minato-ku, Tokyo

a. Research Division: Same address

(11) Analysis of Flexible Pavement Research Results. To analyze technical data obtained from the Flexible Pavement Followup Research Program since 1968, and utilize them for modification of design and construction of flexible pavements. S. Inoue, N. Ogawa, T. Kobayashi. HRIS 24 FUTURE

(12) Vehicle Emissions in Tunnels. To obtain vehicle emission concentrations coefficients for gradient, altitude and speed for tunnel ventilation design. H. Ohhashi, I. Shimada. HRIS 21 ACTIVE

(18) Weather Detection and Information System on the Expressway. To establish the most desirable weather detection and information system for the public safety on expressways under adverse conditions. K. Ito and others. HRIS 54 ACTIVE

(19) Debris Flow Control Measures and Protection of Highways. To establish a standard procedure in investigation of debris flow-prone mountain streams and develop control measures. HRIS 22 (Citations) ACTIVE

(20) Study of Lighting in Highway Tunnels. Investigate road surface luminance, the effect of exhaust gases on veiling the luminance, and deterioration of road surface luminance as related to time and geometric features of tunnels and the traffic volumes. HRIS 21 (Citations) ACTIVE

(21) Study of the Trans-Tokyo Bay Highway as Related to Regional Planning. A study of the relocation of population and industries and the transportation planning associated with this highway, with emphasis on regional planning, residents' attitudes and methods of public participation. Y. Yasoshima. HRIS 12 ACTIVE

(23) Studies of Regular Bus Service on Expressways. Study of expressway bus usage, scheduling, management, to find out improvement measures for future bus service. Y. Satake. HRIS 16 ACTIVE

(25) Study on Quantification of Various Elements Causing Adverse Effect into Monetary Terms. Evaluation of external cost brought about by construction and operation of public facilities as much in terms of money as possible, leading to development of unification of various adverse effects as noise, vibration and gaseous emissions. H. Kono. HRIS 15 ACTIVE

(26) Public Participation and Neighboring Land Use Planning in Expressway Planning. Research into measures to deal with and to respond to public concern over multiple use of highway space and how to make land use be in harmony with local interests. S. Tanifuji. HRIS 15 ACTIVE

4. JAPAN CONSTRUCTION METHOD AND MACHINERY RESEARCH INSTITUTE: 3154 Ohbuchi, Fuji-shi, Shizuoka-ken

(2) A Big Hole Boring Machine for the Foundation of the Honshu-Shikoku Bridge. The research mainly aims to provide information for the foundation works of the Honshu-Shikoku bridge. R. Aisaw, K. Isogami. HRIS 41 COMPLETE

4. (11) Fatigue Tests on a Large Suspension Bridge. To test the fatigue strength of cables for suspension bridges, as well as parts of the trusses. S. Hongo Y. Eguchi, H. Takenouchi. HRIS 25. ACTIVE

(12) Compaction by Large Vibratory Compactors. To obtain useful information for the design of large vibratory compactors, for both soils and asphalt mixtures. Y. Fugimoto, T. Nemoto, M. Kanari. HRIS 41. COMPLETE

(14) Excavation by Hydraulic Jetting. An experiment on a method of setting caissons for pier foundations by excavating the ground under the caisson by hydraulic jetting. T. Kawabata, S. Arakawa. HRIS 33. COMPLETE

(15) Strength Required for Roll Over Protective Structure of Construction Machinery. Experiments to analyze the force acting on R.O.P.S. of earth-moving machinery in roll over accidents. Y. Fujimoto, S. Hongo, M. Kadouchi. HRIS 41. COMPLETE

(17) Design and Construction Method of a Large Cross Section Tunnel. Use of a Finite Element Method analysis to design and construct a large cross section tunnel. R. R. Aizawa, E. Moriuama, K. Yokozawa. HRIS 63. ACTIVE

(18) Measurement and Evaluation of Noise of Construction Equipment. To establish a reasonable method of evaluating noise level. Y. Fujimoto, T. Nishigaya. HRIS 41. ACTIVE

(19) Performance Test of Snow Clearance Equipment. Tests of the performance of various types of snow removal equipment. S. Hongo, M. Kadouchi. HRIS 41. ACTIVE

(21) Measuring Methods of Natural Ground Pressure and Mechanical Properties of Rock. Stress measurements on rock cores taken from pilot tunnel, to determine mechanical stability of a large cave. R. Aizawa, E. Moriyama, K. Yokozawa. HRIS 62. ACTIVE

(22) In Depth Soil Stabilization of Swampy Ground. To improve trafficability of soft swampy ground with a machine for mixing soils with lime and cement to a depth of 4 to 5 meters. T. Mitani, K. Isogami, K. Adachi. HRIS 62. COMPLETE

(23) Excavating Method at the Bottom Edge of Large Caissons. To study the method of excavating soft rock at the bottom edge of a large caisson. K. Isogami, R. Aisawa, Y. Tokairin. HRIS 33. COMPLETE

(24) Freezing Method of Improving Soft Ground. To improve the method of freezing soft ground to make it more stable for construction operations. T. Mitani, Y. Fujimoto, R. Aisawa. HRIS 64. COMPLETE

(25) Fatigue Test for Concrete Slab of Highway Bridges. To improve the design and maintenance method for these slabs by studying the fatigue limit and breakage condition by full-scale testing. K. Adachi, M. Kanari. HRIS 25. ACTIVE

(26) Development of Vibration Evaluation Method at the Operator's Seat of Construction Machinery. In connection with development of vibration standard for construction machinery, to measure at the operator's seat vibration characteristics of bulldozers, wheel loaders, etc. Y. Fujimoto, S. Hongo, T. Nishigaya. HRIS 41. ACTIVE

(27) Winter Traffic in Deep Snow Area. To insure winter traffic in these areas, information is to be collected on characteristics of winter weather, snowfall, snow removal, visibility in snow, avalanche, protective facilities, etc. S. Hongo. HRIS 40. COMPLETE

(28) Operating Mode of Construction Machines in Tunnels. To develop new engines with less hazardous exhaust gas for use in tunnel construction. S. Hongo. HRIS 41. ACTIVE

4. (29) Experimental Research on Propagation Characteristics of Vibration by Blasting. A study of the relation between blasting and vibration characteristics and ground conditions. T. Mitnai. HRIS 63. ACTIVE

New Projects

(30) How to Predict the Sound Power Level of Moving Machinery. Determination of methods and points from which to measure noise levels of construction equipment in motion. Y. Fujimoto, T. Nishigaya. HRIS 17. FUTURE

(31) How to Choose the Method of Rock Excavation. To study relation between rock condition and excavation methods for preparation of data indicating most probable excavation method. T. Mitani. HRIS 33. ACTIVE

(32) How to Predict the Ground Vibration Caused by Rock Blasting. To predict the ground vibration with regard to the weight of the charge and volume of breakage in tunnel and bench-cut blasting. T. Mitani HRIS 63. ACTIVE

5. NATIONAL RESEARCH INSTITUTE OF POLICE SCIENCE (Kagaku Keisatsu Kenkyu-Jo):
6 Sanban-cho, Chiyoda-ku, Tokyo

(10) Signal Operations at Diamond Interchanges. To develop general principles to solve specific problems of accident prevention and congestion. T. Matsunga M. Watanabe. HRIS 54. INACTIVE

(14) Personal Characteristics of Accident-Prone Drivers. To find any psychological peculiarity of accident-prone drivers and to establish psychological driving aptitude tests. H. Ohtsuka. HRIS 52. ACTIVE

(16) Scientific Evaluation of Traffic Safety Campaigns. In-depth interviews with drivers to establish their reactions to traffic safety campaigns, especially oriented toward new safety techniques to be introduced shortly. K. Kobayashi, S. Kamiryo. HRIS 51. ACTIVE

(24) Pedestrian Behavior. To determine pedestrian behavior at pedestrian crossings and at pedestrian-free zones, using memomotion camera technique and eventually computer simulation. M. Kobayashi. HRIS 51. ACTIVE

(25) Comprehensive Automobile Control System. A study to develop a more efficient traffic control system on the urban highway network through the use of the route guidance system. K. Hanawa. T. Matsunga, K. Ikenoue, M. Kobayashi. HRIS 54. ACTIVE

(26) Road Traffic Pollution. To obtain basic data applicable to the problem of traffic management in ways to combat traffic pollution. M. Watanabe A. Arizono T. Kido, Y. Marumo. HRIS 17. ACTIVE

(27) Traffic Simulation Techniques. To develop a simulation model for evaluating alternative traffic control policies. K. Ikenoue, T. Saito, H. Hanado. HRIS 54. ACTIVE

(28) Traffic Assignment Techniques. To construct a computer model for traffic volume predictions in evaluating alternative traffic control policies. K. Ikenoue, T. Kido, T. Saito. HRIS 55. ACTIVE

(29) Traffic Assignment Techniques. To establish traffic assignment techniques for traffic volume prediction for use in evaluation of alternative traffic control policies. K. Ikenoue, T. Kido, T. Saito, H. Hanado. HRIS 55. (Citations) ACTIVE

(30) Traffic Simulation Techniques. To develop three types of traffic flow simulation models on small scale, to be tested against field measurements. K. Ikenoue. T. Saito, H. Hanado, HRIS 55. (Citations) ACTIVE

5. (31) Soft-ware for Urban Traffic Control System. Establishment of basic model for simulation of traffic signal control in order to upgrade system performance. T. Matsunaga. H. Matsumoto. M. Watanabe. T. Saito. HRIS 54. ACTIVE

(32) Comprehensive Automobile Control System. Development of a traffic control system named "Comprehensive Automobile Control System" to provide more efficient traffic control on urban network. K. Hanawa. T. Matsunaga K. Ikenoue. M. Kobayashi. HRIS 54. ACTIVE

(33) Automatic Ramp Control. Experimental metering of ramp operation to determine optimal scheme for location of detectors and signals. T. Matsunaga T. Suzuki. HRIS 54. ACTIVE

(34) Traffic Management Aimed at Reducing Traffic Pollution. To establish methods for estimating traffic pollution concentration to be used for traffic management to reduce pollution. M. Watanabe. H. Matsumoto. T. Kido. Y. Marumo T. Arizono. HRIS 54. ACTIVE

(35) Safety Performance Measures for Highway Operational Improvements. To develop measures for quickly and simply evaluating effectiveness of potential highway safety improvements. K. Ikenoue. M. Kobayashi T. Murata Y. Kozima. R. Saito. HRIS 54. FUTURE

(36) Measurement of Seriousness of Traffic Violations. To find seriousness of violations by measuring normal drivers. drivers with violation records and police officers. K. Kobyashi. H. Matsumoto. J. Uchiyama. HRIS 51. (Citations). ACTIVE

(38) Vehicle Manuevers Related to Accidents. Study of erroneous vehicle manuevers which contribute to accidents. such as lane-changing. Y. Kozima. HRIS 53. FUTURE

(39) Cause and Characteristics of Single Vehicle Accidents. To determine causes of accidents. such as speed. faulty driving. sex. age. occupation. driving record. etc. R. Ohtani. HRIS 51. (Citations). ACTIVE

(40) Pedestrian-Behavior. To determine pedestrian behavior at crossings. using analysis system. including films. graphic computer display and digital signal inputs. M. Kobayashi. Y. Naka. K. Nakamura. HRIS 51. ACTIVE

(41) Understanding and Behavior of Children in Traffic. To investigate children's understanding of. and behavior in. traffic and to establish measures to protect them from traffic accidents. R. Saito. HRIS 51. (Citations) ACTIVE

(42) Method of Pedestrianization of City Center. To determine method for optimal assignment of traffic spaces to pedestrians. personal vehicles and public transport in city center. T. Murata. HRIS 12. (Citations) ACTIVE

(43) Weatherability of Reflective Sheeting for Traffic Sign. To test weatherability of existing reflective sheetings for traffic signs and examine results from various tests. Y. Kojima. HRIS 54. ACTIVE

(44) Nighttime Traffic Accidents. A comparative study of the cause and characteristics of nighttime accidents and daytime accidents with respect to road environment driving behavior and human factors involved. K. Nimura. HRIS 51. ACTIVE

(45) Durability of Traffic Signs. To investigate condition of traffic signs in use with regard to deterioration such as corrosion. cracking and chalking of paint etc. so as to evaluate durability of materials. Y. Kojima. HRIS 54. ACTIVE

5. (46) Durability of Carriageway Markings in Heavily Snowed Areas. To observe damage to pavement markings one winter and test new materials another winter. T. Murata. HRIS 54. ACTIVE

(47) Development of Traffic-Actuated Signal With Detector for Measuring Pedestrian Volume. To analyze pedestrian traffic at signalized crossing so as to develop flexible timing patterns. H. Okamoto. M. Watanabe T. Murata. HRIS 54. ACTIVE

(48) Road Users' Adaptability to New Traffic Rule in Okinawa. Before and after behavioral study of road users' response to changeover to left-hand traffic rules in Okinawa. H. Okamoto. T. Kido. M. Watanabe. HRIS 54. ACTIVE

(49) Internal Character of Traffic Flow. Mathematical analysis in space-time of traffic flow and development of definitions of traffic flow variables. Y. Nishida T. Saitoh. HRIS 55. (Citations) ACTIVE

(51) Improving Measurement of Speeds of Violators. To evaluate different types of speed measurement devices and set up guidelines for their selection. installation, operation, and maintenance. H. Matsumoto. Y. Nishida. HRIS 55. (Citations) ACTIVE

(52) Countermeasures for Reducing Children's Accidents. To establish the countermeasures for such reductions and introduce the guidelines for making an educational curriculum. R. Saito. HRIS 51. ACTIVE

(53) Research on Reflectors for Pedestrians' and Bicyclists' Protection. To develop a guide for effective use of reflectors for this protection. T. Arizono. T. Mitsui. HRIS 53. ACTIVE

(54) Development of Weighing Equipment for Enforcing Overloaded Vehicles. A review of the existing equipment available in terms of improving the accuracy, simplifying the operation and reducing required personnel. H. Matsumoto. T. Mitsui. HRIS 54. ACTIVE

(55) Research for Evaluating Traffic Operational Performance in Street Networks. To develop techniques for such evaluations and provide guidelines for better implementation of operational strategies. T. Kido. T. Saito. HRIS 54. ACTIVE

(56) Research on Method for Evaluating Speed Limits. To develop practical method for evaluating design speed limits in terms of safety, smoothness of traffic flow drivers' acceptability, roadway and environmental conditions, etc. K. Ikenoue T. Kido, Y. Nishida, Y. Kojima. HRIS 54. ACTIVE

(57) Development of New Techniques for Precisely Determining Street Traffic Capacity. To develop a simulation technique for such precise determination of signalized intersection capacity. T. Saito. T. Arizono. Y. Nishida. HRIS 55. (Citations) ACTIVE

(58) Development of Technique for Estimating Variation of Road Traffic Demand with Traffic Operational Improvements. Develop a technique for precise determination of the variation of road traffic demand resulting from operational improvements. T. Saito. T. Kido. K. Ikenoue. HRIS 55. ACTIVE

(59) Research on Measuring and Predicting Travel Time by Vehicle on Street Network. To develop this capability and apply it to advanced traffic control and motorist information systems. Y. Nishida. T. Saito. K. Ikenoue. H. Matsumoto. HRIS 55. ACTIVE

JAPAN (contd)

6. JAPAN SOCIETY OF CIVIL ENGINEERS (Doboku-Gakkai): 1-Chome Yotsuya, Shinjuku-Ku Tokyo.

   a. Technical Study Committee of Bridge Connecting Honshu and Shikoku: Same address.

      (2) Placing of Mass Concrete for Bridges. To determine the best methods for placing mass concrete in order to establish a standard for the Honshu-Shikoku Bridge. HRIS 33. ACTIVE

7. TOKYO CIVIL ENGINEERS INSTITUTE (Tokyo-to Doboku Gijutsu Kenkyujo): 1-1-18, Kohnan, Minato-ku, Tokyo

   (14) Design Method for Street Pavement. To find a rational design method for street pavement in Tokyo. F. Kuramochi. HRIS 24. COMPLETE

   (15) Partial Deformation Characteristics of Asphalt Pavement at Bus Stops. To clarify the cause of partial deformation in bus stops and determine counter-measures. F. Tatsushita, K. Uchida, T. Takeda. HRIS 24. ACTIVE

   (16) Recycling of Asphalt Concrete and Portland Cement Concrete. Laboratory and field work on such recycling. F. Tatsushita, K. Uchida, M. Amemiya. HRIS 33. ACTIVE

8. HOKKAIDO DEVELOPMENT BUREAU (Kokkaido Kaihatsukyoku): Kita 3, Nishi 4, Chome, Sapporo, Hokkaido

   a. Public Works Laboratory: Hirigishi, Toyohira-ku, Sapporo, Hokkaido

      (3) Frost Damage to Concrete Structures. To study means of preventing frost damage. M. Imai, S. Maekawa, T. Ota, T. Matsuo. HRIS 32. ACTIVE

      (14) Engineering Properties of Peaty Soil. To secure fundamental data necessary for designing foundations of pavements and structures in peaty areas. F. Kono H. Sasali. HRIS 61. ACTIVE

      (15) Bearing Capacity and Lateral Resistance of Bridge Foundation Piles in Soft Peaty Areas. To investigate the behavior of long piles against axial and lateral loads and to determine a method of predicting their bearing capacity and lateral resistance. F. Kono, Y. Noguchi, Y. Mori, H. Kamii. HRIS 62. ACTIVE

      (16) Studies on Asphalt Pavement Test Procedures. To investigate and improve various test methods. H. Kubo, N. Iwasaki, Y. Takizawa, M. Wakabayashi. HRIS 24. COMPLETE

      (17) The Ultimate Strength of Steel Girders. To determine the ultimate strength of a simply supported skewed grillage composite girder. A. Ito. HRIS 25. COMPLETE

      (18) Geometric Design of Road in Cold and Snowy Area. To study the effect of snow and ice on speed, headway, and volume, and develop a rational and economic geometric design. T. Takahashi, M. Sasaki, H. Ogino, M. Seizaka, Y. Abe. HRIS 21. COMPLETE

      (19) Skid Resistance of Snow-Covered and Icy Road. To test braking and sideway force coefficient with unique test vehicle developed by the laboratory to improve safety and design. T. Takahashi, K. Sato, M. Kanazawa, M. Seizaki, Y. Abe. HRIS 40. COMPLETE

      (20) Durability of Asphalt Paving Mixtures under Repeated Freezing and Thawing Action. To secure data on the relation of mix-design and freezing-thawing action in order to develop a design method for asphalt bitumen mixtures. S. Kumagai, H. Kubo, M. Wakabayashi, N. Iwasaki. HRIS 31. COMPLETE

8. a. (21) Frost Prevention Works Using Insulating Layer. To study the effectiveness of insulating layers of various materials in preventing frost heave. H. Kubo S. Kumagai, Y. Takizawa. HRIS 24. ACTIVE

(23) A Study of Snow Storms. To study vertical wind distribution, drifting and visible range and determine the best traffic control and construction methods in winter. Y. Muraki, S. Kamata, M. Takeuchi. HRIS 40. ACTIVE

(25) Method of Chemical Analysis of Hardened Concrete. A study of components in hardened concrete such as acid soluble lime, insoluble materials, absorbed carbon dioxide and sodium chloride and others to determine causes of failure in cold, snowy regions. Y. Ito. HRIS 32. COMPLETE

(26) Seismic Investigation of Foundation Rock. To develop and the practical use of shear waves for soft ground and to apply computers to treat the data from seismic investigation. M. Hoshino, Y. Kobayashi, M. Negishi. HRIS 62. ACTIVE

(27) Geological Investigations for Landslides and Tunneling. To solve problems related to the construction of tunnels, experiments are made on the swelling of rock, the rock load on tunnels, the improvement of soft rocks. M. Hoshino Y. Kobayashi, M. Negishi. HRIS 63. COMPLETE

(28) Weathering and Frost Damage of Foundation Rocks. Physical properties of rocks in snowy regions being investigated to study frost damage and weathering. M. Hoshino, M. Osaka. HRIS 62. COMPLETE

(31) Corrosion of Steel in Cracked Reinforced and Prestressed Concrete. Exposure and laboratory tests performed to determine effects of sea wind on corrosion of steel in concrete. S. Maekawa, T. Mathuo, M. Nakadate, T. Fujii, T. Ota. HRIS 32. ACTIVE

(32) Traffic Capacity on a Snowy Road. A study of traffic capacity variations due to weather and road surface conditions. T. Takahashi, K. Sato S. Koizumi. HRIS 55. ACTIVE

(33) Stabilization of Peaty Ground for Earth Fills. To stabilize peaty soils by means of vertical sand drains and sand compaction piles. F. Kono S. Kobayashi, H. Sasaki, M. Shinjo. HRIS 62. ACTIVE

(36) Traffic Accident Analysis and Prevention in Cold and Snowy Areas. Study of the causes and characteristics of traffic accidents in cold and snowy areas and of remedial measures from the viewpoint of highway design. T. Takahashi, T. Sekiya, H. Ogino. HRIS 51. ACTIVE

(37) Load-Carrying Capacity of Existing Reinforced Concrete Bridges. Investigations regarding physical distress of materials, such as cracks and strength reduction of concrete and corrosion of reinforcing bars, by load tests of existing bridges. S. Maekawa, T. Fujii, T. Ohta, K. Kakuta, T. Matsuo. HRIS 25. ACTIVE

(38) Adhesive Properties and Adhesive Strength of Snow and Ice. To define the relation between physical properties of the objects to which ice and snow adhere and adhesive strength, leading to methods for de-icing traffic signals and clearing ice from road surfaces. M. Takeuchi. HRIS 40. ACTIVE

(39) Accelerated Methods for Estimating 28-Day Strength of Concrete. To develop a simple and accelerated method of estimating 28-day strength of concrete based on a comparison of such methods as the water-cement ratio and accelerated curing. S. Maekawa, T. Okamura, T. Mathuo. HRIS 32. COMPLETE

8. a. (40) Ultimate Strength of Reinforced Concrete Beams. To review factors affecting the rational capacity of plastic hinges and the failure process in reinforced concrete beams, in order to obtain a refined equation for rotational capacity and section details to develop the required ductility. T. Ota, T. Mathuo, M. Nakadate, S. Maekawa, T. Fujii. HRIS 25. ACTIVE

(41) Traffic Control in a Cold and Snowy Area. To investigate traffic behavior at intersections as influenced by snowfall, snow drifts and icy conditions to obtain data for the design of intersections and control of traffic. T. Takahashi, T. Sekiya, K. Sato. HRIS 40. ACTIVE

(42) Properties of Rocks and Methods of Investigation. To investigate and measure the physical characteristics of rocks in the Hokkaido area and classify rock beds according to construction purposes. U. Kobayashi, M. Negishi. HRIS 61. ACTIVE

(43) Landslides. The relation between rock weathering and the strength of rock is studied to estimate the engineering properties of rocks and develop preventive measures against landslides by stabilizing methods, using chemical and electric osmosis, heat drying and grouting. M. Hoshino, T. Yoshida. HRIS 63. ACTIVE

(44) Design of Overlay Pavement. To investigate failed pavements to determine the relation of such causes as weather, traffic and structure, in order to establish a design method for overlay pavements. H. Kubo, T. Mima, N. Iwasaki. HRIS 24. ACTIVE

(45) Design and Construction Methods for Concrete Pavement. To investigate the daily and annual changes of temperature, abrasive properties and cracking of concrete pavement to establish design and construction methods. H. Kubo, T. Mimi. HRIS 24. ACTIVE

(46) Ground Vibrations Due to Traffic Load. To investigate for various pavements the ground vibration due to traffic load, and to determine countermeasures. H. Sasaki, S. Noto. HRIS 24. ACTIVE

(47) Properties of Bituminous Materials for Asphalt Pavements. Experiments on mixing rubber and resins with bituminous mixtures to improve trafficability and abrasive properties of asphalt paving mixtures. H. Kubo, T. Mimi, Y. Takizawa. HRIS 31. ACTIVE

(48) Urban Traffic in a Cold and Snowy Area. To investigate traffic behavior in an urban area where roads are slippery from ice and narrowed by snow drift. T. Takahashi, T. Sekiya, Y. Abe. HRIS 24. COMPLETE

(49) Dynamic Pile Foundation Behavior in Soft Peaty Ground. To determine a satisfactory design of a pile foundation for earthquake loading in soft peaty soil. M. Kagaya, H. Osaka. HRIS 62. ACTIVE

(50) Stability of Highway Bridges in Earthquakes. A study of the stability of bridges on soft and peaty foundations, and laboratory experiments on model bridges using a horizontal vibration instrument. A. Ito, H. Takagi. HRIS 25. ACTIVE

(51) Artificial Subbase Materials. Laboratory and field tests, using building insulation material as a subbase course and slag from an aluminum smelting furnace as aggregate for subbase, in efforts to develop new subbase materials. H. Kubo, T. Mima, M. Toyoshima. HRIS 35. ACTIVE

(52) Actual Conditions of Snowdrifts. Studies of snowdrifts caused by blowing and drifting snow, the information to be used as an aid in selecting suitable geometric design and in planning snow removal. M. Takeuchi, K. Ishimoto, T. Nohara, Y. Fukuzawa. HRIS 40. ACTIVE

8. a. (53) Frost Heave, Freezing-Thawing in Rocks and Their Countermeasures. Research on the mechanism of frost heave, and freezing-thawing cycles in various rocks, considering characteristics and engineering properties of rocks. K. Yuicji, N. Masamitsu. HRIS 64. ACTIVE

(54) Bearing Capacity of the Foundation under Particular Ground Conditions. Determine suitable calculation method for bearing capacity of foundations for structures. N. Yoshinori, M. Yasuo, T. Yoshikazu, I. Masaru. HRIS 62. ACTIVE

(55) Countermeasures of Poor Clayey Soil in Filling. To investigate effectiveness of stabilization of poor clayey soils so as to provide suitable filling material. S. Harumi, S. Ken. HRIS 62. ACTIVE

(56) Application of Peaty Soft Ground Improvement Methods. To determine better methods for improving bearing capacity of peaty soft ground for embankments. S. Harumi, N. Shigeyuki. HRIS 62. ACTIVE

(57) Soundness of Existing Concrete Structures. To develop technique for evaluating soundness of concrete structures deteriorated by environment or overloading. O. Toshitaka, I. Masutaka, N. Makoto. HRIS 25. INACTIVE

(58) Evaluation of Freezing and Thawing Resistance of Concrete. Re-examination of indexes for freezing and thawing resistance of concrete to obtain more suitable indexes. M. Tetsuro, O. Toshitaka, I. Masutaka. HRIS 32. INACTIVE

(59) Early Curing of Concrete. Study of the relationship between early curing of concrete and its hardening for economical winter concreting. M. Tetsuro, O. Toshitaka, I. Masutaka. HRIS 32. ACTIVE

(60) The Joint of Concrete Structures. Study of prefabrication of concrete structures and all year construction in areas of low temperature, involving steel arrangements and problems of behavior of concrete of different ages. M. Toshiro, O. Toshitaka, N. Makato. HRIS 25. COMPLETE

(61) Local Traffic in a Cold and Snowy Area. To investigate the influence of snow and ice on local traffic in order to obtain a rational geometric design of the roadway, taking into consideration snow disposal areas. K. Kaya, K. Okudaira, T. Fukasaka. HRIS 40. COMPLETE

(62) Land Slide Prevention Work Using Piles. Laboratory investigation of relationship between earth pressure on such piles and the bearing mechanism in order to establish rational design and construction methods. HRIS 63. ACTIVE

(63) Estimation of Traffic Flow on Roads in a Cold Snowy Area. To develop method for estimating traffic flow in Hokkaido during cold, snowy weather. K. Fukuda, M. Takamori, S. Suzuki. HRIS 55. ACTIVE

(64) Optimal Design of Structures in a Cold Region. To study optimal design methods for structures in a cold climate, and ultimately to develop a design manual. Y. Matsushita. HRIS 25. ACTIVE

(65) Rational Design Method for Substructure and Foundation. To study supporting characteristics of foundation structural elements, such as abutments, piers etc., and develop rational design method. S. Hirose, Y. Mori, M. Ishihara. HRIS 62. ACTIVE

(66) Stability of Slopes of Roads. An investigation of factors that cause failures of slopes in order to obtain methods for stabilizing slopes in various field conditions. H. Sasaki, H. Sugioka, K. Nemori. HRIS 63. ACTIVE

New Projects

8. a. (67) Air Pollution Due to Motor Traffic. Measurements of traffic generated air pollution to develop prediction method. A. Hatakeyama Y. Kadoyama. HRIS 17. ACTIVE

(68) Control of Temperature and Shrinkage Cracking in Concrete. To develop a design procedure for controlling temperature and shrinkage cracking in concrete. T. Ohta, M. Imai, N. Konagai, F. Kitamura. HRIS 32. ACTIVE

(69) Snow Depth Increment Measure. To develop an automatic instrument to measure increments of snow depths. T. Takashima. HRIS 40. ACTIVE

(70) Engineering Properties of Frozen Soil. Investigation of soils under freezing and thawing conditions to develop countermeasures. H. Sasaki, Sh. Noto T. Kawanishi. HRIS 64. ACTIVE

9. JAPAN SOCIETY OF TRAFFIC ENGINEERS (Kotsu Kogaku Kenyukai). Syoyu Kaikan 3-3-3 Kasumigaseki, Chiyoda-ku, Tokyo

(20) Capacity of At-Grade Intersections and Weaving Areas. To determine capacity of at-grade intersections and weaving areas by field study and simulation modeling. HRIS 55. ACTIVE

12. GIFU UNIVERSITY, DEPARTMENT OF CIVIL ENGINEERING (Gifu Diagaku Kogakubu Dobokukogakuka): Nakamonzencho, Kagamigahara City, Gifu

(4) Prestressed Concrete Girders with Precast Members. Investigations to clarify problems and rational design methods include: basic characteristics of horizontal and vertical joints; effects of joints on cracking and failure modes; analysis of shrinkage and creep of concrete in these structures. F. Ohama, K. Kobayashi. HRIS 25. ACTIVE

(5) Design and Planning of New Transportation Systems in Urban Areas. An urban transportation study to include: user needs; planning including new systems; transportation network model; character of new systems; optimized simulation. A. Katoh. HRIS 12. ACTIVE

(7) Travel Market Equilibrium in Networks. Investigation of urban travel demand model considering person's time allocation behavior and iterative methods for estimation of equilibrium flows in transportation network. A. Katoh, T. Miyagi. HRIS 55. (Citations) ACTIVE

13. HOKKAIDO UNIVERSITY (Kokkaido Daigaku): Kita 13 Nishi 8-chome, Kita-ku Sapporo, Hokkaido

(24) Control of Traffic Flow on Streets. Investigations relative to the movement of traffic in summer and winter to establish a basis for rationalizing street traffic systems in winter and summer. C. Itakura, T. Kaku, S. Horie. HRIS 54. INACTIVE

(31) Street Crossing Traffic Patterns. A study of the traffic patterns at street crossings in order to lay the foundation for a model of traffic effects at angle crossings, and to understand the behavior of vehicles at crossings. T. Kaku S. Horie, C. Itakura. HRIS 54. ACTIVE

(32) Materials and Structure of Asphalt Pavements. Research on the materials and structure of asphalt pavements. T. Sugahara. HRIS 31. ACTIVE

(35) Fatigue Property of Bituminous Mixtures. Investigation of dynamic property and fatigue resistance of bituminous paving mixtures, using an electrohydraulic apparatus. T. Sugawara, A. Kasahara. HRIS 31. ACTIVE

13. (40) Traffic Flow and Capacity in Winter. Measurements and analyses of traffic flow on rural highways and expressways during winter conditions, indicating 20-30% decrease in snow fall season. T. Kaku, K. Saito, S. Tsuji. HRIS 55. COMPLETE

(43) Rheological Properties of Asphaltic Mixtures. Investigations for single load applications, stress-strain relationships under various loading conditions and temperatures. T. Sugawara, A. Moriyoshi, T. Kamijima, A. Kasahara. HRIS 31. (Citations) ACTIVE

(44) Dynamic Response of Bituminous Mixtures. Investigation of dynamic responses and fatigue properties of bituminous mixtures under various loading and temperature conditions. T. Sugawara, A. Moriyoshi, A. Kasahara, T. Kamijima. HRIS 31. (Citations) ACTIVE

(45) Study of Structural and Deformation Characteristics of Orthotropic Steel Bridge Decks. Analytical and economical determination of deck plate thickness, stiffener interval, form of closed rib and asphalt pavement thickness. N. Watanabe. HRIS 25. (Citations) ACTIVE

(46) Stress Behavior of Well-Made Interlocking Steel Pipe Piles. Measure of dynamic and static stresses in the structure to establish method for design S. C. Nomachi. HRIS 25. (Citations) FUTURE

(47) Dynamics of Vehicle Collisions. To develop some models on vehicle collisions and apply them to actual accident conditions. T. Kaku, S. Tsuji, T. Fujiwara. HRIS 51. COMPLETE

(48) Reasonable Setting of Traffic Regulations. To find out the reasonable setting of traffic regulations from the relationship between scope of the regulations and the queues of vehicles, using theory and computer simulation. T. Kaku S. Tsuji, T. Fujiwara. HRIS 54. ACTIVE

(49) Investigation of Vehicle Construction and Highway Facilities on Traffic Safety in Snowy District. Investigate the relationship between vehicle design and highway safety facilities on winter highways. T. Kaku, K. Horiuchi, S. Tsuji. HRIS 53. (Citations) COMPLETE

(50) Velocity Dispersion Curves of Stress Wave in Thin Walled Box Girders. Study of the distribution of dynamic response in these girders and the acoustic power spectrum emitted while a moving load passes. S. G. Nomachi. HRIS 25. ACTIVE

(51) Measurement of Skid Resistance on Various Types of Road Surface With Laboratory Test Equipment. To determine effect of microscopic textures of pavement on skid resistance, and correlate laboratory-determined values with those of skid test vehicles. T. Kaku, T. Fujiwara, Y. Onodera. HRIS 24. ACTIVE

(52) Infrasound Generated by Bridges From Running Vehicles. To evaluate subsonic sound generated by bridges during passage of heavily loaded vehicles. S. G. Nomachi. HRIS 25. ACTIVE

(53) On the Relationship Between the Pavement Surface and Traffic Accidents. To study effects of pavement irregularities carried by frost and vehicle-inflicted damage on vehicle behavior and safety. T. Kaku, K. Moriuchi, S. Tsuji. HRIS 51. ACTIVE

(54) On Ultimate Strength Design of Reinforced Concrete Multigirder Bridge. To study experimentally under torsion, bending, and deformation the stress distribution in reinforced concrete multigirder bridges beyond the point of cracking. Y. Fujita. HRIS 25. (Citations) ACTIVE

13. (55) Criterion for Failure Due to Crack Initiation and Propagation in Plain Concrete as Composite Material. To study analytically and experimentally the initiation and propagation of cracks in concrete, and analyze the chemical properties of aggregate-mortar interfaces. Y. Fujita. HRIS 32. ACTIVE

(56) Stresses and Deformations of a Surfaced Orthotropic Steel Deck Under Wheel Loading. Investigation of the composite action of asphalt and steel deck panel by means of the folded plate analysis. J. Yoshimura, N. Nirasawa. HRIS 25. ACTIVE

(57) Safety Evaluation for Large Truck and Trailer in Left Turning Movement at Intersections. To evaluate the safety when such a unit turns considering focus of the unit and the area of the intersection. T. Kaku, K. Horiuchi, T. Fujiwara. HRIS 53. ACTIVE

(58) Noise Generation Mechanisms of Tires. To clarify the effect of noise generation by various tread patterns. T. Kaku, Y. Onodera. HRIS 53. ACTIVE

(59) Traffic Control at Intersection Considering Saturated Flow. Study of traffic control using computer simulation based on field survey of congested flow. T. Kaku, S. Tsuji. HRIS 54. ACTIVE

(60) Precision of Transportation Demand Forecast Process. An analysis of forecasting precision of transportation demand, which is influenced by survey data precision, the fitness of the models used and the dependent variables of the model. H. Igarashi, K. Yamagata. HRIS 55. (Citations) ACTIVE

(61) Transportation Demand Characteristics in Snowy Area. To determine the demand characteristics in winter by comparing data in winter with those found in the summer. H. Igarashi, K. Yamagata, K. Sato. HRIS 55. ACTIVE

(62) Transportation System in the Rural Area. To investigate the role and participation of each mode of public transit in the rural transportation movement and to plan a system for the area. H. Igarashi, K. Yamagata, K. Sato. HRIS 16. ACTIVE

New Projects

(63) Transportation for Elderly or Handicapped Persons. Investigating and planning for the mobility and transportation of elderly or handicapped persons. H. Igarashi, K. Satoh, H. Chiba. HRIS 16. ACTIVE

(64) Application of Semiology to Landscape Planning. To develop a method of landscape planning by means of semiology by analyzing and breaking down the landscape into elements. H. Igarashi, K. Satoh, H. Chiba. HRIS 23. ACTIVE

(65) Thermal Cracks of Asphalt Pavements. Field investigation of thermal cracks and low temperature research on rheological properties of asphaltic mixtures. T. Suguwara, A. Moriyoshi. HRIS 24. (Citations) ACTIVE

(66) Effective Widths of Curved Girder Bridges. To investigate effective widths of curved bridges by folded plate analysis and the influence of radius of curvature. Y. Yoshimura, N. Nirasawa. HRIS 25. (Citations) ACTIVE

(67) On Deformation and Ultimate Strength of Reinforced Concrete Member Subjected to Combined Stresses. Analyses of specimen ranging from plain concrete to multi-girder bridges were made for more accurate estimates of the deformation and ultimate strength of reinforced concrete members. Y. Fujita, N. Saeki. HRIS 25. (Citations) COMPLETE

(68) On a Solution of Dynamic Response of Structure by Means of Virtual Work. To analyze the dynamic behavior of structures by means of virtual work principle. S. Nomachi, Y. Kakuta. HRIS 25. (Citations) ACTIVE

13. (69) Study for Earthquake Response of Structure to Three Dimensional Seismic Waves. Development of analytical technique to study earthquake response of the six-degrees-of-freedom structural systems subjected to three dimensional seismic waves. N. Watanabe, T. Kaneko. HRIS 25. (Citations) COMPLETE

(70) Statistic Approach on Behavior of Cracking and Failure of Plain Concrete. An analysis of the fracture stress of concrete by studying the behavior of the energy release due to crack signals observed by acoustic emission techniques. Y. Fukita, N. Saeki. HRIS 32. (Citations) COMPLETE

(71) Uncontrollable Movement of Vehicles in Acceleration or Deceleration on Snowy and Icy Road Surfaces. Analysis of uncontrollable vehicle movements under icy conditions by basic equations of vehicle motion considering varying friction coefficient of each wheel. T. Kaku, Sh. Tsuji, T. Fujiwara. HRIS 53. ACTIVE

14. KOBE UNIVERSITY (Kobe Daigaku): Rokkadai-cho, Nada-ku, Kobe

(6) Reliability of Friction-Type Bolted Joints for Steel Structural Members. To test reliability of friction-type bolted joints in steel structural members. A. Nishimura. HRIS 33. ACTIVE

(8) Stability of Underground Structures. A study of the stability of a circular tunnel in a viscoelastic-plastic medium under hydrostatic stress state, also similar study of arbitrary shaped tunnel under more complex state of stress. S. Sakurai. HRIS 34. INACTIVE

(11) Development of KUCPAS (Kobe University City Planning Aid System). To develop a computer program and system to aid planners to prepare more rational town plans. T. Edamura. HRIS 12. ACTIVE

(14) Behavior of Reinforced Concrete Slabs Under Impulsive Traffic Load. A study to clarify behavior of R. C. slabs under impulsive traffic load, including a derivation of dynamic magnification factors by applying the elastic-dynamic theory and comparing with experimental results. A. Nishimura, M. Fujii, A. Miyamoto. HRIS 25. ACTIVE

(15) Measurement of Pretension in Tightened Bolts. Use of a new instrucment for bolt tightening, based on the elastic limit of the bolt, to estimate bolt pretension, the nut being rotated until the elastic limit is reached, and using the angle of nut rotation and the pretension-angle of the nut rotation curve, the bolt pretension is estimated. A. Nishimura. HRIS 25. ACTIVE

(18) On Fatigue Failure of Flexible Pavement. Propose method of fatigue analysis in flexible pavements under consideration of traffic and environmental conditions, and estimating pavement response to loads. K. Tanimoto, M. Nishi. HRIS 24. (Citations) ACTIVE

(19) On the Settlement of Embankment Due to Seeping Water. Investigation of the effect of water action on embankment settlement by means of triaxial tests for different soil conditions and stresses. K. Tanimoto, T. Noda. HRIS 62. (Citations) ACTIVE

New Projects

(20) Performance Improvement of Reinforced Concrete Slabs Under Impact Loading. To clarify dynamic behavior of concrete slabs reinforced in various ways to improve performance under dynamic loading. M. Fujii, A. Miyamoto. HRIS 24. ACTIVE

New Projects

14. (21) Evaluation of Reliability of Welded Structures Based on Non-Destructive Inspection. To determine the correlation between fatigue strength and the result of non- destructive inspection on specimen having intentional flaws. A. Nishimura, O. Minata. HRIS 25. ACTIVE

(22) Secular Change in Structural Reliability of Friction-Grip Bolted Structures. By experiment and analysis to estimate the secular change in structural reliability of high-strength-bolted steel structures. A. Nishimura. HRIS 25. ACTIVE

(23) Serviceability Estimation for Cracked Reinforced Concrete Slabs of Highway Bridges. To establish method of estimating objectively and quantitatively the serviceability of cracked bridge slabs. A. Nishimura, M. Fujii. A. Miyamoto. HRIS 25. ACTIVE

(24) The Effect of Vibration During Curing on the Behavior of Reinforced Concrete Bridge Deck Slab. To study the effect on curing deck slabs of vibrations caused by passing traffic. A. Nishimura, M. Fujii, A. Miyamoto. HRIS 25. ACTIVE

(25) Site Measurements During Tunnel Construction Works. To establish a methodology for use of results of site measurements to construct tunnels safely and economically. S. Sakurai. HRIS 63. ACTIVE

15. KUMAMOTO UNIVERSITY, FACULTY OF ENGINEERING (Kumamoto Daigaku Doboku Kogakuka): 860 Komamoto

(8) Measurement of Dampness in Concrete. To develop instruments to measure dampness by electrical resistivity. H. Yasumaka, I. Murakami. HRIS 32. ACTIVE

(10) A Study of the Geotechnical Properties of Volcanic Ash Soil with Organic Matter. To determine the mechanism of the variational behavior of this soil. A. Suzuki, S. Aramaki. HRIS 63. ACTIVE

(12) Seismic Responses of Bridges with Tall Piers. Purpose of study is to compare the static response with the dynamic response of bridges with tall piers of 30 to 60 meters. T. Yoshimura. HRIS 25. ACTIVE

(15) Dynamic Responses of a Continuous Beam Under the Action of Moving Loads. Investigation of dynamic responses of continuous beam bridges due to moving loads. As the response obtained theoretically differs from the experimental result the writer tries to find a proper system for determining the response to moving loads. T. Yoshimura. HRIS 25. ACTIVE

(17) Effect of Preloading on Volcanic Ash Soils. To study behavior of Aso volcanic ash soils when preloaded; preliminary finding -- preloading increases stiffness even with high saturation and poor drainage. A. Suzuki. Y. Kitasono. HRIS 62. (Citations) ACTIVE

(18) Slope Failure (Granular Cohessionless Materials). Study of the effects of angle of inclination of retaining walls, type of materials and its angle of repose as well as friction between wall and surface. M. Inoue. HRIS 63. ACTIVE

New Project

(19) Shear Strength of Concrete Members Especially Subject to Combined Bending and Axial Loads. Beam tests to establish a systematic theory of web reinforcement against shear failure under combined loads. H. Yasunaka. HRIS 25. ACTIVE

16. KYOTO UNIVERSITY (Kyoto Daigaku): Yoshidahonmachi, Sakyo-ku, Kyoto

a. Department of Civil Engineering: Same address

(2) The Engineering Properties of Decomposed Granitic Soils. To evaluate the engineering properties of Masa for road materials. S. Matsuo, K. Sawa. HRIS 63. ACTIVE

(9) The Fluctuation of Ground-Water Level. To investigate the fluctuations of ground-water levels and the outflow of ground-water at excavations. S. Matsuo, I. Kono. HRIS 63. ACTIVE

(21) Soil Stabilization with Quicklime and Hydrated Lime. A study of subgrade improvement by addition of lime in laboratory and in field experiments. S. Matsuo. HRIS 62. ACTIVE

(23) Stabilization of Slopes and Landslides. A study of the mechanism of natural alterations of soils, paying close attention to exchangeable ions absorbed and the effect of ground-water. S. Matsuo, T. Tomita. HRIS 63. ACTIVE

(24) Fiber Reinforced Concrete. An investigation of the mixing method and mechanical properties, especially strength, elasticity and toughness, of fiber reinforced concrete. K. Okada, W. Koyanagi. HRIS 24. ACTIVE

(26) Probabilistic Approach to the Safety of the Bridge Structures. To give a physical meaning to the "safety factor" and to derive a rational design formula by evaluating uncertainties in the bridge design process. N. Shiraishi, M. Matsumoto H. Furuta. HRIS 25. (Citations) ACTIVE

(27) Matrix Analysis of Bridges. To introduce configuration of structures into formulation of the analysis for efficient use of digital computers and to improve precision of solutions. N. Shiraishi, T. Taniguchi. HRIS 25. (Citations) ACTIVE

(28) Aero-static and Dynamic Stability of Bridge Structures. To investigate wind characteristics, their effects on bridge response characteristics, and to improve stability characteristics of bridges. N. Shiraishi, M. Matsumoto. HRIS 25. (Citations) ACTIVE

(30) Planning Information System for Project Planning of Highway Network Facilities. To compile effective information for highway project planning through traffic assignment model with multi-objects such as total travel time minimization, total travel cost minimization, noise level minimization, etc. K. Yoshikawa, M. Haruna, K. Kobayashi, T. Matsumoto. HRIS 11. (Citations) ACTIVE

(31) Wearing Characteristics of Working Parts of Construction Machinery in Excavating Soil or Rock. To study wear characteristics of equipment used in excavating soil or rock, taking into account type of metal used in the equipment and the excavated material, and to develop rationale for selection and use of machine parts. S. Hata and others. HRIS 41. ACTIVE

(32) Rock Bolt Support in Tunneling. To study mechanism of rock bolting near the mining face in rock tunnels. S. Hata and others. HRIS 63. (Citations) ACTIVE

(33) Wearing Characteristics of Off-the-Road Tires. To study wearing of off-the-road tires of construction equipment and to develop rationale for selection use and maintenance of such tires. S. Hata and others. HRIS 41. (Citations) ACTIVE

(34) Excavation Mechanisms of Excavation Machinery. To study excavation machinery and methods suitable to the soil or rock at the construction site; data to be obtained from in-situ and laboratory tests. S. Hata and others. HRIS 41. ACTIVE

16. a. (35) Anisotropy and Stress Reorientation in Clay Under Load. To study stress and strain in normal and overconsolidated clay using the Anisotropic Cam Clay model. S. Hata and others. HRIS 62. (Citations) ACTIVE

(36) Systems Analysis for Effective Information for Highway Bypass Planning. To employ systems analysis methods for highway planning, with program goals including minimization of travel time, cost, noise level, and pollution; analysis to be validated by case studies. K. Yoshikawa, M. Haruna, K. Kobayashi. HRIS 12. (Citations) ACTIVE

(38) Aseismic Design of Highway Bridges with Deep Pile Foundations in Soft Surface Layer. Investigation of dynamic soil-structure interaction, considering liquification of surface layer, earthquake response and phase differences in excitation at each pier. Y. Yamada, H. Iemura. HRIS 25. (Citations) ACTIVE

(39) Structural Analysis and Design of Long-spanned Bridges Subjected to Dynamic Loads. To obtain rational methods of safety analysis and design of long-span bridges, with particular attention to evaluation of unsteady areodynamic characteristics and responses. N. Shiraishi, M. Matsumoto, H. Furuta. HRIS 25. (Citations) ACTIVE

(40) Soil Stabilization of Subbase Courses and Subgrades. An investigation of soil stabilization on soft ground or weathering ground. S-I. Matsuo, M. Kamon, K. Kamimura, K. Moki. HRIS 62. (Citations) ACTIVE

New Project

(41) Structural-Functional Analysis of the Transportation Problem. To develop a structuring methodology for analysis of structure of urban transportation problems utilizing structured modelling and multidimensional scaling. K. Yoshikawa, M. Haruna, K. Kobayashi. HRIS 12. (Citations) ACTIVE

b. Department of Transport Engineering: Same address

(7) An Analysis of Traffic Flow Through Fluid Dynamic Analogy. To determine the effect of traffic flow on the mental aspect of drivers. T. Sasaki, S. Myojin, N. Inoue. HRIS 55. ACTIVE

(10) Modal Split Procedure. To investigate the choice of transportation facilities for trips around the base (office, home, terminal and hotel). T. Sasaki, K. Kondo, R. Kitamura. HRIS 16. ACTIVE

(11) Design of the Optimal Network Pattern. An examination of the optimal network pattern when trip distribution is given through a land use plan. T. Sasaki. HRIS 16. ACTIVE

(12) Traffic Control on an Urban Expressway System. To estimate the origin and destination of trips between ramps and to describe traffic-flow over an expressway. T. Sasaki, S. Myojin, N. Inoue. HRIS 55. ACTIVE

(20) Structure of the Urban Traffic Space. Urban traffic space, defined as the space in which transportation facilities exist, is analyzed and a method of planning and design is developed. K. Amano, K. Sakakibara. HRIS 12. ACTIVE

(21) Land-use and Urban Financial Model. To develop an urban model to include finance land-use and transportation. T. Sasaki, S. Takeuchi. HRIS 15. (Citations) ACTIVE

(22) Correction of Trips in the OD Table by Traffic Count on the Road. To correct the OD tables by actual road counts to insure proper distribution among zones of the traffic. T. Sasaki, N. Inoue. HRIS 55. ACTIVE

16. b. (23) Optimal Bus Route Network Planning. To develop a method of optimal bus route network planning consisting of selection of alternate routes, elimination of routes, and selection of frequency of schedules. K. Amano, Y. Zenitani N. Konto. HRIS 11. (Citations) ACTIVE

(24) The Impact on Urban Land Use of Improvement of Arterial Roads. To study changes in land use resulting from improvement of an arterial road using statistical analyses of time series data on population, urban activities, and facilities. K. Amano, T. Toda. HRIS 15. ACTIVE

c. Department of Mineral Science and Technology: Same address

(1) Control of Vibration Caused by Blasting for Tunneling. Two methods for reducing vibrations are discussed: special firing techniques where 250 ms delay caps are used; presplitting to cut the rock between a shot point and a point of interest. I. Ito. K. Sassa. HRIS 33. ACTIVE

(3) A Study on the In-situ Evaluation of Soil by Electrical Prospecting. Experimental studies on the relation between electrical resistivity of soils and the physical and mechanical properties of the soil. E. Yoshizumi, K. Sassa, T. Sugano, A. Saito. HRIS 61. ACTIVE

17. KYUSHU UNIVERSITY (Kyushu Daigaku Doboko Kogakuka): Hakozaki-machi, Higashi-ku, Fukuoka City

a. Civil Engineering Department: Same address

(17) Punching Shear Test of a Concrete Slab. To study failure properties of a model slab under point loading. T. Mizuno, Y. Tokumitsu, J. Moon, H. Matsushita T. Yamoto. HRIS 32. COMPLETE

(18) Two-Dimensional Creep of Concrete. To determine the fundamental creep properties of concrete under two axial load. T. Mizuno Y. Tokumitsu J. Moon, T. Ishikawa, H. Matsushita. HRIS 32. COMPLETE

(19) A Seismic Design of Steel Pipe Bridge Pier in Soft Foundation. To determine the effect of earthquake wave at the bottom of the foundation layer. S. Kotsubo, T. Takanishi. HRIS 62. COMPLETE

(28) Artificial Lightweight Aggregate Concrete. To study the properties of artificial lightweight aggregate concrete as a structural material by experimental and theoretical means. Y. Tokumitsu, T. Ishikawa, H. Matsushita, T. Esaki, T. Hirata, H. Ouchida, M. Fujimura. HRIS 32. COMPLETE

(29) Experimental Study of the Properties of Crushed Stone Concrete. To study the relationship between the properties of crushed stone concrete and those of river gravel concrete. Y. Tokumitsu, T. Ishikawa, H. Matsushita, T. Esaki, M. Fujimura, H. Ouchida. HRIS 32. COMPLETE

(30) Experimental Study of Super High Early Strength Portland Cement Concrete. To study the fundamental properties of super high early strength Portland Cement concrete as a new engineering material. Y. Tokumitsu, T. Ishikawa H. Matsushita, T. Esaki, H. Ouchida, T. Hirata. HRIS 32. COMPLETE

(31) The Collapse of Slopes. To determine how slope collapse occurs, models are formed in a box and tilted until slope collapse occurs. Density and moisture content of soils are varied and their effect examined. I. Uchida, T. Hirata. HRIS 62. ACTIVE

(35) Properties of Sand Clay Mixtures. Tests of various mixtures of sand and clay to clarify the properties - liquid limit, plastic limit, compaction, shear cohesion - of the mixtures. I. Uchida, S. Murata. HRIS 62. COMPLETE

17. a. (36) New Subbase Materials for Road Subbase. Exploitation and tests of new subbase materials - blast furnace slag, granular stabilized slag, crushed stone, slag macadam, stabilization with asphalt and cement. I. Uchida, S. Murata, M. R. Karmacharya. HRIS 62. COMPLETE

(37) Collapse of Slope. To clarify mechanisms of slope failures and find better technical methods to prevent them. I. Uchida, T. Hirata, S. Murata. HRIS 62. (Citations) ACTIVE

(38) Responses of Stiffened Arch Bridges under Moving Loads. Comparison of calculated values of simplified load models for dynamic analyses with experimental responses. T. Yoshimura, H. Hikosaka. HRIS 25. (Citations) ACTIVE

(39) Non-Stationary Vibrations of Highway Bridges under Moving Loads. An analytic study of non-stationary vibration of bridges, with unevenness of road surface an important factor. H. Hikosaka, T. Yoshimura, T. Uchitani. HRIS 25. (Citations) ACTIVE

(40) Static and Dynamic Failure Mechanism of Bridges. To establish rational design of ultimate bridge strength and failure under earthquake motion. T. Ohta, F. Imai. HRIS 25. (Citations) ACTIVE

(41) Static and Dynamic Analysis of Curved Girder Highway Bridges. Detailed analysis of thin-walled, large scale structures. T. Yoshimura, H. Hikosaka, H. Otsuka. HRIS 25. (Citations) ACTIVE

New Projects

(42) Potential-Flow Analogical Model to Forecast the Spatial Distribution of Population. For city planning, a potential flow analogical model will be developed to forecast the interzone movement of populations. T. Chisaki. HRIS 13. ACTIVE

(43) Low Frequency Air Vibration Generated from Bridges. Field measurements on real bridges and model experiments to develop method of assessing infrasound air vibration level generated from bridges due to passage of vehicles. S. Kotsubo, S. Uno, T. Sonoda. HRIS 25. (Citations) ACTIVE

(44) A Study on the Strength of Precast RC and PC Beams Connected with a Steel Joint. To study the mechanical properties of steel joint connections for concrete beams in order to establish a reasonable bolted steel connection technique and a practical design. T. Ohta, Sh. Hino. HRIS 25. (Citations) ACTIVE

(45) Failure Mechanism of Curved Bridges. To establish rational design of curved bridges with emphasis on ultimate strength and deformation by theoretical and experimental means. T. Ohta, F. Imai. HRIS 25. (Citations) ACTIVE

(46) Properties of Crushed Sand Concrete. This study aims to examine the properties of concrete and mortar using crushed sand. Y. Tokumitsu, H. Matsushita, T. Makizumi. HRIS 32. (Citations) ACTIVE

(47) Durability of Concrete. An examination of the corrosive effect of concrete by exposure to natural hot springs water and to sea water where corrosion of the reinforcing steel will be examined. Y. Tokumitsu, H. Matsushita, T. Makizumi. HRIS 32. ACTIVE

(48) Theoretical and Observational Investigation of Traffic Flow. For solving bottleneck and traffic control problems in a road network, a study of dynamic traffic flow will be developed using compressive non-steady flow analogy and actual observation. T. Chishaki. HRIS 55. ACTIVE

17. a. (49) Mechanical Behavior of Cohesive Soils Under Repeated Loads. Investigated the stress-deformation-strength characteristics of cohesive soils under repeated loads using a newly developed device which yielded additional knowledge. T. Yamanouchi and Staff. HRIS 63. COMPLETE

(50) Deformation Properties of a Sand-Clay Under Repeated Loadings. Based on stress-strain relationships and multi-regression analysis an optimized compaction range for subgrade materials was proposed based on the experimental results. K. Makiuchi. HRIS 63. COMPLETE

(51) Soil Structure and Mechanical Properties of Organic Soils. An intensive study of organic soils which among many things observed a correlation between an index developed and such properties as permeability and tri-axial compressive behavior. T. Yamanouchi and Cooperative Research Team. HRIS 63. COMPLETE

(52) Mechanical Properties of Cohesive Soil Using General Stress Control Apparatus. A three dimensional apparatus was developed to load the six faces of a cubical specimen for complete analysis of stress-strain. T. Yamanouchi and staff. HRIS 63. COMPLETE

18. NAGOYA INSTITUTE OF TECHNOLOGY (Nagoya Koygo Daigaku): Gokiso-cho, Showa-ku, Nagoya

b. Department of Transportation Engineering: Same address

(5) Optimization of Multi-modal Transportation Network Flows. To consider the optimization of transportation network flows for multiclass travel modes which share the same roads. H. Mitsui. HRIS 55. (Citations) ACTIVE

(6) Bicycle as a Mode of Urban Transportation. Consideration of the limitations to the use of the bicycle as a mode of transportation in urban areas and an evaluation of its advantages. H. Matsui, K. Izuhara. HRIS 53. ACTIVE

19. NAGOYA UNIVERSITY (Nagoya Daigaku): Furo-cho, Chikusa-ku, Nagoya

(6) The Elasto-Plastic States and the Stability of Natural Slopes. Investigation of stability of slopes for various ground or soil conditions. T. Kawamoto. HRIS 63. ACTIVE

(14) An Application of Correlation Techniques to the Dynamic Measurements of Structures. To observe behavior of bridges and foundations under normal traffic conditions, sensitive instruments to measure deflections are employed. S. Shimada. HRIS 25. ACTIVE

(17) States of Stress and Deformation of Slopes, and Foundations of Piers on Slopes. Evaluation of slope stability loadings, containment of bridge pier foundations on weathering road slopes, and decreased stability factors due to weathering through elastic-plastic analyses supported by photoelastic experiments. T. Kawamoto. HRIS 63. ACTIVE

(20) Stability of Embankments on Inclined Bed-Rock. Investigation of embankment stability including consideration of non-linear deformation behavior and strength characteristics of materials, geometrics of the embankment and slope of the bed-rock, and seepage conditions. T. Kawamoto, T. Saito. HRIS 62. ACTIVE

(23) Improved Gravity Model for Trip Distribution. Application of the modified Gravity model to data developed in Nagoya City for three years which verified its validity for estimating traffic. S. Kawakami. HRIS 55. ACTIVE

(24) Park and Ride System in Nagoya Metropolitan Area. Results of a person trip survey are analyzed to clarify the conditions which make commuters resort to park and ride systems, and to find the significance of the system in the transport plan for transport policy making. S. Kawakami, Y. Hirohata. HRIS 13. ACTIVE

19. (26) Classification and Characteristics of Truck Traffic. Use of data from a person trip survey in a study and analysis of the truck position in transportation planning. S. Kawakami. HRIS 12. ACTIVE

(27) Development of Computer Programs for Geometrical Structural Models. Development of geometrical models in a computer for the design of engineering three dimensional structures as well as topographical shapes. S. Shimada. T. Tajima. M. Kato. Y. Ito. Department of Civil Engineering. HRIS 25. (Citations) ACTIVE

(28) Combined Model of Trip Distribution, Modal Split and Traffic Assignment. To develop some combined models of these three factors so as to permit a better forecast of traffic demand. S. Kaqakami. Department of Civil Engineering. HRIS 55. ACTIVE

(29) Study on the Impact of Improvement in Public Transit Against Commuter's Modal Choice. To analyze the commuter's modal choice behavior on the basis of data obtained by the present commuting situation survey along a newly opened subway. S. Kawakami. Y. Hirobata. Department of Civil Engineering. HRIS 11. ACTIVE

(30) Study on the Determination of Optimum System of Transportation. To determine optimum means and networks for the given demands for passenger transport by using Dynamic Programming. S. Kawakami. Y. Hirobata. Department of Civil Engineering. HRIS 12. ACTIVE

New Project

(31) On the Modal-Split Models to Assign Person-Trips. Eight aggregate type modal-split models were compared for trip purpose with best selected. and a disaggrate type model was verified useful for other aspects of the problem. S. Kawakami. T. Isobe. HRIS 12. ACTIVE

20. NIHON UNIVERSITY (Nihon Daigaku): 8. 1-chome. Kanda-Surugadai. Chiyoda-ku. Tokyo

a. Research Institute of Technology: Same address

(2) The Application of Interfacial Electro-Kinetic Phenomena of Soils. To investigate interfacial electro-kinetic phenomena of soils. their relation to physical properties. and to consider electro-osmosis for foundation engineering. M. Asakawa. HRIS 63. ACTIVE

(9) The Relationship Between Regional Structure and the Trend in the Changing Characteristics of Motor Car Use in Japan. To study the effect on land development plans. S. Tanifuji. K. Yamada. HRIS 13. INACTIVE

(13) Thermal Buckling of Pavement. To study the effect of initial curvature and difference of temperature on pavement buckling. M. Kawaguchi. HRIS 24. ACTIVE

(16) Change of Soil Structure due to Leaching and to Geotechnical Properties of H+ Clays. To investigate soil structure by electrolytic dialysis and consolidation tests. M. Asakawa. M. Nakamura. HRIS 64. ACTIVE

(17) Scour Around Piers and Abutments. To investigate the beginning of scour action and maximum scour depth around the spur dike. S. Awazu. T. Kondo. HRIS 62. ACTIVE

(19) A Method of Structural Design of Asphalt Pavements on Weak Subgrades. Use of sandwich and composite designs in an investigation of methods for rational design of asphalt pavements on weak subgrades. Y. Miura. HRIS 24. ACTIVE

20. a. (20) Accuracy of Deflection Measurement in Relation to Multilayered Elastic Theory. To estimate the accuracy of deflection measurement by Benkelman Beam method from standpoint of this theory. Y. Abe. HRIS 24. ACTIVE

b. Faculty of Science and Engineering: 7-24-1, Narashinodai, Funabashipshi, Chiba

(4) An Experimental Study of Buckling of Concrete Pavements. Experimental studies of buckling of concrete pavements due to thermal stress are being made, both on models and in the field. M. Kawaguchi. HRIS 24. ACTIVE

(7) Design of Bituminous Overlay. A study to evaluate the mechanical condition of the pavement by the radius of deflection curvature to use as the basis for a method of design, together with development of a technique for continuously measuring the radius of curvature. Y. Miura. HRIS 24. ACTIVE

(8) Decision Making in Urban Bus Transportation. Use of a bus transportation system model to observe the behavior of waiting-time and number of buses, considering passenger behavior and traffic flow; this information being used to evaluate the effect of alternative dispatching decisions and for economical bus use. Y. Hanzawa T. Matsuda. HRIS 16. ACTIVE

(9) Highway Interchange Area Development. To develop program for encouraging desirable urban development and a land-use planning method by quantitative analysis in the highway interchange area. K. Takada. HRIS 15. (Citations) ACTIVE

(10) Evaluation of Existing Pavement Based on Deflection and Radius of Curvature. Development of method to determine stiffness of subgrade and pavement by deflection and radius of curvature of existing pavement. Y. Miura K. Kawashima. HRIS 24. (Citations) ACTIVE

(11) Traffic Characteristics of Vehicles Entering Tokyo. To determine the actual traffic characteristics of vehicles entering Tokyo, so as to develop countermeasures to maintain optimum traffic conditions. K. Takada, S. Uchida. HRIS 55. (Citations) ACTIVE

(12) A Fundamental Study of Traffic Operations in Existing Residential Area. To suggest a method of traffic operations to set forth the improvement of residential environments. K. Takada, S. Uchida, K. Amatsu. HRIS 54. (Citations) ACTIVE

(13) Natural Environment and Bearing Capacity of Subgrade. A quantitative determination of the factor of natural environment acting on the bearing capacity of subgrade to be considered in pavement design. Y. Miura, A. Fujita. HRIS 62. (Citations) ACTIVE

21. OSAKA CITY UNIVERSITY (Osaka Shiritsu, Daigaku): 459 Sugimotocho, Sumiyoshi-ku, Osaka

(2) Traffic Assignment Techniques. To develop a more practical traffic simulation technique on a highway network. M. Mori, T. Nishimura. HRIS 55. COMPLETE

(3) Analysis of Highway Network Capacity. To evaluate highway network capacity by screenline theory. M. Mori, T. Nishimura. HRIS 55. COMPLETE

(4) Application of Traffic Assignment. To evaluate the various projects in a highway network, such as new route construction highway improvement, intersection improvement and traffic regulation. M. Mori, T. Nishimura. HRIS 55. COMPLETE

(10) Fundamental Studies of Comprehensive District Planning in Urban Areas. A study of the factors attendant to city planning policy. T. Mise T. Nishimura T. More. HRIS 12. INACTIVE

21. (11) Analysis of the Traffic Capacity of the Transportation Network. The theoretical aspect of network capacity is studied using digital computer and models. T. Mise, T. Nishimura, M. Nakamura. HRIS 55. COMPLETE

(13) Road Safety Facilities. Road safety facilities are studied, especially with regard to pedestrian overpasses. T. Mise, T. Nishimura, M. Yamada. HRIS 51. COMPLETE

(14) Materials for Colored Pavements. Film types and binder types of colored pavement mixtures are tested for their physical,chemical and mechanical properties in the laboratory and in field experiments especially on roads for Expo '70 sites. T. Mise, M. Yamada, M. Mashima. HRIS 34. COMPLETE

(16) Properties of a Bituminous Mixture. Properties of bituminous materials are studied using rheological methods. The effects of Portland cement added to asphaltic emulsions have been studied. Creep properties of the asphaltic materials and some special types of pavement are being studied. T. Mise M. Yamada, M. Mashima. HRIS 31. ACTIVE

(17) Dewatering of Clay by Means of "Osmotic Phenomena." Specially designed piles containing semi-permeable membranes are set in the ground and filled with a concentrated special solution. Pore water of the clay is transported into the piles through membranes placed on the surface of the piles by which method clayey subgrades are easily dewatered. T. Mise, M. Yamada. HRIS 62. ACTIVE

(19) Evaluating the Comprehensive Transportation System. Development of methods of evaluation for a comprehensive transportation system which involves social costs, satisfaction levels of users, investment and travel time cost. T. Mise, T. Nishimura, Y. Shimazu. HRIS 15. COMPLETE

(20) Consideration on Optimal Network Problem. A study considering the optimal network for origin and destination of traffic by OD-pattern, the objective being to avoid disproportional utilization of the network. T. Nishimura, Y. Hino (Traffic Engineering Lab). HRIS 55. COMPLETE

(21) Soil Absorption of Carbon Monoxide. A study of carbon monoxide absorption by soils, considering system of the absorption, relation with soil conditions, the effect of air and utilization to prevent air pollution. T. Mise M. Yamada, K. Ikeda (Caculty of Engineering). HRIS 17. COMPLETE

(22) Maintenance and Repair of Pavement. To develop the best policy governing maintenance and repair of pavements in cities. T. Mise, T. Nishimura M. Yamada, Y. Inoue (Faculty of Engineering). HRIS 40. ACTIVE

(23) Stress under Wheel Loading in Bridge Deck Slab. Use of theoretical and experimental stress analysis to obtain a rational estimation method of contact pressure and width of tire load for design of bridge deck slabs. M. Kurata K. Sonoda, T. Horikawa (Faculty of Engineering). HRIS 25. COMPLETE

(24) Behavior of Steel-Concrete Composite Slab. Experimental research to investigate mechanical behavior of composite slabs used with deck plate or concrete and steel bridgedeck. (Concrete Laboratory, Faculty of Engineering). HRIS 25. ACTIVE

(25) Multivariate Analysis of Indices of Present Surface Condition of Pavement. Development of the indices of the serviceability of pavements by using cross analysis, multiple regression analysis, and quantification analysis. T. Mise, T. Nishimura, M. Yamada, H. Taki, K. Kadota (Traffic Engineering Lab). HRIS 24. ACTIVE

JAPAN (contd)

21.	(26)	Traffic Accidents on Urban Expressway. Use of the Quantification Scaling Methods in an analysis of traffic accidents with regard to road factors - radius of curvature. vertical alignment. curve length - and other factors such as causes and kinds of accidents. weather. time. month. etc. T. Mise. T. Nishimura. H. Takai (Traffic Engineering Lab.). HRIS 51.	COMPLETE
	(27)	Elastro-Plastic Behavior and Lateral Buckling of Horizontally Curved I-Girder Bridges. Theoretical analyses of lateral buckling of curved I- girder bridge in elasto-plastic ranges. and experimental studies of model beams, in order to develop a simple formula for determining allowable compressive stresses to be used in design. N. Nakai. H. Kotogauchi (Faculty of Engineering). HRIS 25.	COMPLETE
	(28)	Lateral Buckling Strength of Horizontally Curved I-Girder Bridges with Bracing Systems. Investigate effect of sway and lateral bracing on lateral buckling strength of curved parallel girder bridges. H. Nakai H. Kotoguchi. HRIS 25. (Citations)	COMPLETE
	(29)	Slipperiness of Sidewalk Surfaces. To suggest criteria for evaluating slipperiness of pavement as related to risk to pedestrians. T. Mise. M. Yamada. Y. Tanabe. HRIS 24.	INACTIVE
	(30)	Experimental Study of Lateral Buckling Strength and Contribution of Lateral and Sway Bracing to Horizontally Curved I - Girder Bridges. To study lateral buckling strength of braced. horizontally curved I - girder bridges. and develop design formulas for bracing to prevent such buckling. H. Nakai. H. Kotuguchi. T. Tani. HRIS 25. (Citations)	COMPLETE
	(31)	Lateral Buckling Strength of Horizontally Curved I - Girders With Bracing Systems. Theoretical and experimental study to determine characteristics for effective lateral bracing and to evaluate bracing system design. H. Nakai H. Kotoguchi. HRIS 25. (Citations)	COMPLETE
	(32)	Fatigue Failure Mechanism of Reinforced Concrete Bridge Deck Slabs. To clarify both experimentally and theoretically the fatigue strength and failure mechanism of reinforced concrete deck slabs under pulsating and moving loads. K. Sonoda. K. Kobayashi. T. Horikawa. HRIS 25. (Citations)	COMPLETE
	(34)	Recycling of Waste Soils Generated from Road Construction. To develop methods to evaluate subbase and other waste paving materials for reuse in new pavements. and to improve them where feasible. T. Mise. M. Yamada. K. Masuda. HRIS 33.	ACTIVE
	(35)	Maintenance and Repair of Pavements. To develop maintenance and repair policies for pavements in Kobe and similar cities. T. Mise. T. Nishimura. M. Yamada. HRIS 40.	ACTIVE
	(36)	Fundamental Research on Estimation Method of Driving Modes of Vehicles. To develop simple method for estimating various motor vehicle operating modes (acceleration. cruising. idling. etc.). T. Nishimura. Y. Hino. HRIS 53.	ACTIVE
	(37)	Fundamental Study on Comprehensive Traffic Regulations for Residential Areas. To survey the effects of traffic regulations in selected areas by before-and-after methods. T. Nishimura and others. HRIS 54.	ACTIVE
	(38)	Research on Effective Establishment Planning of Guide Signs. To develop improved guide signing; 4 types of survey (including questionnaires) are to be used. T. Nishimura. Y. Hino. HRIS 54.	ACTIVE
	(41)	Theoretical and Experimental Study of Multicourse System by Follow-up Investigation. To study multicourse systems in both laboratory and field with deflection measurements with Benkelman Beam and plate bearing test. M. Mashima. O. Yamanaka. HRIS 24. (Citations)	INACTIVE

22. (42) Fatigue Failure Mechanism of Reinforced Concrete Bridge Deck Slabs. Experimental clarification of fatigue strength and mechanism of reinforced concrete slabs saturated by rain water under both pulsating and transferring loadings. K. Sonoda, H. Kobayashi, T. Gorikawa. HRIS 25. (Citations) COMPLETE

(43) Study on the Road Maintenance System. To develop a road maintenance system including methods of measuring and evaluation. T. Nishimura, Y. Hino. HRIS 40. ACTIVE

(44) Study on Multicommodity Flows in Planar Road Networks. Study of the maximal flows in plane road networks when an origin-destination table is given. T. Nishimura, H. Okamura. HRIS 55. ACTIVE

(45) Study on a Relationship Between Land Use and Traffic Generation. To develop a prediction model for traffic generation based on analysis of land use activity. T. Nishimura, Y. Hino, M. Kudo. HRIS 55. ACTIVE

New Projects

(46) Fundamental Research on the Analysis and Evaluation of the Urban Environment in Built-Up Area. To investigate the commuter's and resident's of the environmental quality of a specified district and to relate this investigation to the physical facility density. T. Nishimura, Ch. Usui. HRIS 17. ACTIVE

(47) Analysis of the Multi-layered Pavement System. Using the results of field tests of roads based on the elastic theory, it is expected to develop a practical design method based on the index of relative strength of layers. T. Mise, M. Mashima. HRIS 24. ACTIVE

(48) Fundamental Study on Ultimate Strength of Web Elements for Horizontally Curved Girder Bridges Subjected to Pure Bending. To analyze the ultimate strength of web elements in a curved girder bridge by derivation of the elasto-plastic finite displacement theory. H. Nakai, T. Kitada, R. Ohminami. HRIS 25. ACTIVE

(49) Mechanical Properties of Glass-Fiber Reinforced Concrete. Because of mixing problems, the relationships between mechanical properties, fiber-shape, particle size distribution and fiber quantity will be investigated. T. Mise, M. Mashima T. Ideguchi. HRIS 32. (Citations) ACTIVE

(50) Mechanical Properties of Materials of the Clay-Cement Wall System. To investigate hardening and bonding mechanism of cement grouted clay wall reinforced by an H pile for obtaining design data. T. Mise, M. Yamada, M. Mashima H. Negoro. HRIS 63. ACTIVE

22. OSAKA UNIVERSITY (Osaka Daigaku): Yamada-kami, Suita, Osaka 565

a. Department of Civil Engineering: Same address

(25) Traffic Planning in Small-sized Satellite Cities. To undertake traffic safety planning without town renewal, and to separate pedestrians and cyclists from motor vehicles. C. Watanabe. HRIS 12. INACTIVE

(26) Relationship between Residential Environment and Road Traffic. To study the relationship between residential environment and road traffic and to establish the "environment traffic capacity." A. Mihoshi. HRIS 12. ACTIVE

(29) Ultimate Strength of Stiffened Plate with Initial Imperfections. An experimental and theoretical study of the behavior of stiffened plates with such initial imperfections as residual stresses and initial deflections, in order to gain data for adequate design of stiffened plates. S. Komatsu, T. Kitada. HRIS 25. COMPLETE

(22) (31) Modal Split from the Transit Viewpoint. An analysis of the relationship between modal split and transit network from the point of view that it is determined by the transit service level. C. Watanabe. HRIS 12. ACTIVE

(36) Residential Environment Planning and Design from Point of Urban Traffic. Development of new traffic planning and road design methods to ensure safety, health, comfort and convenience in the urban area. M. Mori, A. Mihoshi. HRIS 12. ACTIVE

(38) Effect of Piles on Slope Stability. A proposed theory of calculation for the lateral pressure acting on piles to be checked by experimental results. T. Ito, T. Matsui. HRIS 62. ACTIVE

(39) Dynamic Characteristics of Cable-Stayed Girder Bridges. To investigate the dynamic response of such bridges under a moving load by a series of parametric numerical analyses. S. Komatsu, M. Kawatani. HRIS 25. COMPLETE

(42) The Road and Its Environment Planning. An investigation of the relationship between traffic noise and traffic volume, speed, position and structure of buildings, with the intent of proposing traffic regulation and land use planning to conserve the residential environment. M. Mouri. HRIS 15. ACTIVE

(43) Improvement of Bus Transit Service in a Residential Suburb. Use of computer simulation involving speed and bus stop location in a study to improve public transportation in a suburban residential area. Y. Nitta (Dept. of Civil Eng.). HRIS 11. INACTIVE

(44) Ultimate Strength of Rectangular Plates with Three Edges Simply Supported and One Edge Free. Use of the finite element method in calculating the ultimate strength of compression members with thin-walled sections, considering the sections to be rectangular plates with three edges simply supported and one edge free, and the behavior as elastic-plastic with large deflection. S. Komatsu T. Kitado. HRIS 25. COMPLETE

(45) Field Test for Impact of Multiple Cable Stayed Girder Bridge. Field dynamic tests under moving loads of a multiple cable stayed girder bridge are made in which measurement of natural frequency and logarithmic decrement are measured and impact factors determined. S. Komatsu, M. Kawatani. HRIS 25. COMPLETE

(55) Generation of Access-Type Park-and-Ride from Suburban New Town. Analysis of relation between time ratio and choice rate by commuters from a new town. M. Mori, C. Watanabe. HRIS 12. COMPLETE

(56) Analysis of Bus Flow Characteristics on Mixed Traffic Road. Observation of existing flow as a check on developed formula covering mixed flow. M. Mori, Y. Nitta, A. Nakahira. HRIS 55. COMPLETE

(57) Traffic Planning Method Considering Land-use Characteristics. To determine relation between land-use and traffic facilities. M. Mori, S. Tanaka, K. Taiyu. HRIS 15. COMPLETE

(58) Pedestrian Movement. To establish criteria for space design for pedestrians by observing movements in footways and unseparated roads. M. Mori, H. Taukaguchi. HRIS 51. ACTIVE

(59) Analysis of Ultimate Strength of Compressed Stiffened Plates with Initial Imperfections. An approximate method by which ultimate strength of compressed stiffened plates can be easily calculated with considerable accuracy. S. Komatsu, T. Kitada. HRIS 25. (Citations) COMPLETE

22. (60) Non-Linear Analysis of Thin-Walled Structures by Finite Strip Method. To clarify difference between small deformation theory and finite displacement theory, with the effect of imperfections. Y. Maeda, M. Hayashi. HRIS 25. (Citations) COMPLETE

(61) Optimum Design of Steel Girder Bridges Taking into Consideration Their Fabrication Costs. In addition to considering minimum weight and minimum material cost designs, this project also considers fabrication costs and other shop costs. Y. Maeda, Y. Konishi. HRIS 25. (Citations) COMPLETE

(62) Limit State Approach for Design of Steel-Concrete Composite Highway Girder Bridges. Apply a limit state approach to design of bridges by analytical studies of partial safety or load factors, ultimate stress models and serviceability limit state. Y. Maeda, Y. Kajikawa. HRIS 25. (Citations) COMPLETE

(63) Fracture Mechanics Analysis of Fatigue Cracking at Fillet Welds in Out-of-Plane Bending. Investigation of fatigue cracking at fillet welds between flange and web of a plate girder or between side plate of cylindrical tank. Y. Maeda. HRIS 25. (Citations) COMPLETE

(64) Planning of Floor System of Long-Span Suspension Bridges in Relationship with Construction Method, Economy and Performance. Evaluation of relationships, such as fabrication, erection, maintenance, economy. Y. Maeda. HRIS 25 . COMPLETE

(65) Fatigue of Reinforced Concrete Slabs at Highway Bridges. To confirm by fatigue tests that cracking is generated by repeated loadings. Y. Maeda, S. Matsui. HRIS 25. (Citations) COMPLETE

(66) Finite Element Analysis of Structural Behavior of Open-Web Expanded Beams. Examine stresses and deflections of such beams, which can be applied to stringers of steel bridges. Y. Maeda, S. Matsui. HRIS 25. (Citations) COMPLETE

(67) Ultimate Strength of Compressed Plates Stiffened in Both Longitudinal and Transverse Directions. To determine the ultimate strength of compressed plates stiffened in both longitudinal and transverse directions and evaluate the initial imperfections in welding such as residual stresses and deflections. S. Komatsu, T. Kitada. HRIS 25. (Citations) ACTIVE

(68) Study of Impact Coefficient of Cable-stayed Girder Bridges. Dynamic analysis of these bridges subjected to single moving load or multiple moving loads. S. Komatsu M. Kawatani. HRIS 25. (Citations) COMPLETE

(69) Probabilistic Study on Safety of Highway Bridges. To obtain fundamental but practical information applicable to bridge design. Y. Maeda. HRIS 25. (Citations) COMPLETE

(70) Ultimate Load-carrying Capacity in Bending of Hybrid Composite Beams. An investigation of two hybrid-steel composite main girder bridges in which the beams consist of flanges and webs with a lower strength than the flanges. Y. Maeda, K. Kajikawa. HRIS 25. (Citations) COMPLETE

(71) Structural Interaction between Out-of-Plane Initial Web Deflection and Initiation of Fatigue Crack Type 1 at Plate Girders for Highway Bridges. Observation of cracking at fillet welds connecting webs to compressive flanges when girder subjected to repeated bending. Y. Maeda. HRIS 25. COMPLETE

(72) Survey on the State-of-the-Art of Composite Constructions for Highways in Japan. A summary report on present status and future problems for use of composite construction in Japan. HRIS 25. COMPLETE

22. (73) International Survey on the Application of Limit States Approach to Design of Composite Girder Highway Bridges. Survey of practices in U.S.A., England France, Germany and U.S.S.R. Y. Maeda, Y. Kajikawa. HRIS 25. (Ctiations) COMPLETE

(74) Three-Dimensional Behavior and Ultimate Strength of Long-Span Steel Arch Bridges. To examine in-plane and out-of-plane behaviors and the ultimate strength of such bridges. Y. Maeda, M. Hayashi, S. Matsui. HRIS 25. COMPLETE

(75) Elastic-Plastic Flexural Behavior and Ultimate Strength of Partially Composite Beams. Investigation of these behavior and strengths in beams in which shear connectors are omitted along the span length near the end supports for simply supported beams and near intermediate support on continuous beams. Y. Maeda, Y. Kajikawa. HRIS 25. (Citations) COMPLETE

(76) Fatigue of Steel-Grating Concrete Slabs for Highway Bridges. To study fatigue on these slabs used for long-span suspension bridges. Y. Maeda, S. Matsui. HRIS 25. (Citations) COMPLETE

(77) Ultimate Strength of Steel Box Girders for Highway Bridges. Toexamine the interaction between overall and local behaviors of thin-walled stiffened-plate box beams. Y. Maeda. HRIS 25. ACTIVE

(78) Risk Assessment of Highway Transportation Against Fire and Explosion. Investigation of the risks involved in fire and explosion resulting from collisions and falling down of heavy vehicles transporting hazardous materials, particularly near bridges and tunnels. HRIS 51. ACTIVE

(79) Application of Steel-Concrete Composite Structures to Cable-Stayed Girder Highway Bridges. To investigate feasibility of and problems in using composite (steel and concrete) structures in cable-stayed bridges, by surveying existing cable-stayed bridges and studying model structures of this type. Y. Maeda, S. Matsin. HRIS 25. COMPLETE

(80) Basic Study on Nonlinear Analysis of Thin-Walled Structures Considering Their Local Deformation. Study leading to modification of finite element and finite strip methods for analysis of structural behavior of thin-walled structures, and to application to several problems of plate or box girders. Y. Maeda, M. Hayashi. HRIS 25. (Citations) COMPLETE

(81) Fatigue of Small-Sized I-Shaped Beams for Steel Grating Bridge Slabs. To investigate possible starting of fatigue cracks around web holes in I-beams, fatigue tests of single beams will be carried out; crack propagation will then be studied. Y. Maeda, S. Matsin. HRIS 25. (Citations) COMPLETE

(82) Fatigue of Orthotropic Steel Deck Plates of Highway Bridges. To study fatigue in orthotropic steel deck plates experimentally and theoretically. Y. Maeda. HRIS 25. ACTIVE

(83) Experimental Study of Load Factors and Resistance Factors on Composite Girder Highway Bridges. Using old steel-concrete (composite) girders, tests will be performed (static and fatigue), and statistical analysis of the previous records of the bridges while in service will fix their past load factors. Y. Maeda, Y. Kajikun. HRIS 25. ACTIVE

(84) Analysis of Combined Nonlinearities of Plane Framed Structures Provided With Cable Members. To investigate the ultimate strength and behavior up to failure of plane framed structures with cable members, using matrix analysis. Y. Maeda, M. Hayashi. HRIS 25. (Citations) COMPLETE

22. (85) Nonlinear Analysis of Thin-Walled Structures by Finite Strip Method. To develop more efficient analysis of nonlinear problems of thin-walled structures by the finite strip method, improving accuracy and reducing calculation time. Y. Maeda, M. Hayashi. HRIS 25. (Citations) COMPLETE

(86) Survey of Composite Structures in Highway Construction in Japan -- Part II. Succeeding the first survey of steel-concrete composite highway structures (1965-1975), this second survey (1975-1978) will be done by a survey of the literature. Y. Maeda. HRIS 25. (Citations) COMPLETE

(87) Stress Analysis of Cylindrical Steel Sheels in Bending. To obtain equations of stress calculations for steel silos when subjected to lateral loadings, like wind or earthquake, in addition to stored loads, such as cement or aggregate. Y. Maeda. HRIS 25. COMPLETE

(88) Deterioration of Steel-Concrete Composite Bridges. A test on a 25-year old composite simple bridge to determine its characteristics of strength, deterioration etc. Y. Maeda, S. Matsui, Y. Kajikawa. HRIS 25. ACTIVE

(89) Analysis of Shrinkage Stresses of Concrete in Composite Girders Considering Slips. To determine more exact shrinkage stresses of concrete in composite girders taking onto account slips between concrete slabs and steel girders. Y. Maeda, Y. Kajikawa. HRIS 25. COMPLETE

(90) Optimum Design Method of Cable-stayed Girder Bridges. To solve optimization problems efficiently in order to decrease design variables taking into account various structural features of the bridge, in the calculations of sequential linear programming. Y. Maeda. HRIS 25. ACTIVE

(91) Application of Prebeam Composite Girders to Continuous Construction. A study of the connections to find various practical methods for joining the parts of the finished girder, using models. Y. Maeda, Y. Kajikawa. HRIS 25. ACTIVE

(92) Out-of-plane Secondary Bending Stresses at Boundary of Thin Web Plate in In-plane Bending. To determine the relationship between secondary bending stresses and initial deflections of beam webs in thin walled girders. Y. Mseda, I. Okura. HRIS 25. ACTIVE

(93) Structural Behavior and Ultimate Strength of Prefabricated Hollow Steel Decks. To determine the longitudinal flexural rigidity, lateral flexural rigidity and torsional rigidity of such decks. Y. Maeda, S. Matsui. HRIS 25. (Citations) ACTIVE

(94) Compressive Strength of Welded H-Shaped Steel Columns. A study of the effects of four kinds of residual stresses and the initial deflections if due to welding on these columns. Y. Maeda, T. Hikasa. HRIS 25. ACTIVE

(95) Analysis of Stress Concentration at Weld of Headed Stud Welded to Plate. Application of the finite element of the study of fatigue cracking at the toe of the weld. Y. Maeda, Y. Kajikawa. HRIS 25. ACTIVE

(96) Behavior and Strength of Partial-Composite Continuous Beams. An investigation of the behavior and strength of such beams for application to highway bridges. Y. Maeda, Y. Kajikawa. HRIS 25. COMPLETE

New Projects

(97) Initiation of Displacement-Induced Fatigue Cracks at Welds to Connect Member to Secondary Member of Steel Bridge. Field investigations and model studies will be made of displacement-induced fatigue cracks in welds to give parameters which can be used in designs to prevent such cracks. Y. Maeda, I. Okura. HRIS 25. ACTIVE

New Projects

22. (98) Structural Behavior and Design Standardization of Steel Cylindrical Silos in Bending. Silos both loaded and unloaded were subjected to lateral (earthquake, wind) forces and a computer program for stress calculation was developed. Y. Maeda, I. Okura. HRIS 25. (Citations) ACTIVE

(99) Survey of New Specifications for Design of Steel and Composite Bridges - AASHTO BS5400 and DIN. A survey of those specifications will be carried out to assist in coming revision in AASHTO, BS5400 and DIN. Y. Maeda, Sh. Matsui, Y. Kajikawa, I. Okura. HRIS 25. ACTIVE

(100) Non-Linear Analysis at Erection of Long-Span Cable-Stayed Girder Bridges. Modification of an existing computer program will be carried out to include erection of cable-stayed girder or truss bridge for use in construction of Honshu-Shikoku bridge projects. Y. Maeda, M. Hayashi. HRIS 25. ACTIVE

(101) Ultimate Strength and Fatigue of Composite Floor Slabs Consisting of Orthotropic Steel Deck Plate and Reinforced Concrete Slab. This study is to make laboratory tests for ultimate strength and fatigue of the proposed composite floor slab to verify the theoretical prediction. Y. Maeda, Y. Kajkawa. HRIS 25. FUTURE

(102) Concept of Structural Safety Against Failure of Civil Engineering Structures. Investigation of the literature of civil engineering structural failures and review of present design codes were used to develop a risk control concept based on human error and control of failure range. Y. Maeda. HRIS 51. (Citations) COMPLETE

(103) Ground Pressure Acting on Arbitrary Shaped Tunnel Lining in Viscoelastic Ground. Problems of external ground pressure acting on tunnel lining are solved by using Integral Equation Method. T. Ito, M. Hisatake. HRIS 63. (Citations) COMPLETE

(104) Surface Displacements Caused by Shallow Tunnel Driving in Viscoelastic Ground. Analysis by method of a complex variable and finite element method based on both field observations and model experiment will be made on surface displacement caused by shallow tunnel driving. T. Ito, M. Hisatake. HRIS 63. (Citations) ACTIVE

(105) Analytical Study of New Austrian Tunneling Method. The New Austrian Tunneling Method (NATM) is analyzed by various means for different aspects of the problem. T. Ito, M. Hisatake. HRIS 63. ACTIVE

(106) Stress Change of an Existing Tunnel Lining Due to Parallel Tunnel Excavation. This problem was investigated by using Integral Equation Method and Finite Element Method, taking into account time dependency of given ground. T. Ito, M. Hisatake. HRIS 63. (Citations) COMPLETE

(107) Effects of Blast Vibration on Existing Tunnel Lining. An investigation using the Finite Element Method of problems of stress, velocity and acceleration of an existing tunnel subject to neighboring blast vibration. T. Ito, M. Hisatake. HRIS 63. ACTIVE

23. TOKYO UNIVERSITY (Tokyo Daigaku): Hongo 7 chome, Bunkyo-ku, Tokyo

a. Department of Civil Engineering, Faculty of Engineering: Same address.

(5) The Wind Resistant Design of Long-Span Bridges. Analysis by wind tunnel of suspension bridge stability in strong wind. M. Ito, I. Okauchi, T. Miyata. HRIS 25. COMPLETE

23. a. (8) Bearing Capacity of Non-Uniform Ground. To examine how the constitution of the soil influence the bearing capacity and the formation of plastic zones under static loads. G. Imai, H. Fukai. HRIS 63. ACTIVE

(13) Load Factor Design Procedure of Highway Bridges by Reliability Approach. An examination, from the standpoint of consistent reliability, of the definition of various design safety features and the evaluation of load factors for dead, live and windload. M. Ito. HRIS 25. COMPLETE

(14) Wind Effects on Suspension and Cable-Stayed Bridges. Wind tunnel experiments including a full-model test as well as theoretical approach include: characteristics of unsteady wind force components acting on bridge decks; gust response of flexible bridge structures; evaluation of dynamic instability phenomena; behavior of suspended bridge decks under erection. M. Ito, T. Miyata. HRIS 25. ACTIVE

(15) Application of New Materials to Concrete Structures. An investigation of expansive concrete and plastic concrete for use in concrete structures. Y. Higuchi K. Kobayashi, H. Okamura. HRIS 25. ACTIVE

(16) Fatigue Properties of Concrete Structures. Studies include: fatigue properties; ordinary R.C. and steel, R. C. composite structures under bending moment; the effect of shear force on R. C. statically indeterminate structures. H. Okamura. HRIS 25. ACTIVE

(17) Earth Pressure on Retaining Walls. Steel panels and load cells are used for precise measurement of total pressure with simultaneous measurement of wall friction. M. Fukuoka. HRIS 62. ACTIVE

(18) Comprehensive System of Transportation. Study of a regional transportation system so that future system may be proposed considering transportation demand engineering conditions and social conditions. Y. Yasoshima. HRIS 13. ACTIVE

(19) Applications of Disaggregate Behavioral Models. Using data from various cities, to study applicability of various disaggregate behavioral models to modal, route, and destination choices of commuters and shoppers. K. Ohta, N. Hanada. HRIS 16. ACTIVE

(20) Probalistic Design Rationale for Design Loads and Load Factors of Highway Bridges. Study of the probalistic factors of such loads as wind, live, combined and others to provide a reliable design factor. M. Ito, Y. Fujino. HRIS 25. (Citations) ACTIVE

(21) Wind Effects on Suspended-span Bridges. A study of the various dynamic phenomena caused by natural winds and establishment of design criteria for wind-resistant structures. M. Ito, T. Miyata, H. Oguri. HRIS 25. (Citations) COMPLETE

New Projects

(22) Empirical Relationship Between Urban Structure and Car Ownership. To analyze the relationship between urban settings and car ownership using data from Japanese cities. T. Ashizawa. HRIS 12. (Citations) ACTIVE

(23) A Method of Transportation - Land Use Planning. To develop a combined plan of transportation and land use based on models of both which will permit forecasting. H. Nakamura, Y. Hayashi, K. Miyamoto. HRIS 13. (Citations) ACTIVE

b. Institute of Industrial Science: 7-22-1 Roppongi Minato-ku Tokyo

(10) Characteristics of Earthquake Motion in Rocky Ground. Observations of earthquake ground motion at the surface of rocky ground and underground at the deepest 67 meters below the surface has been made. Tamura Laboratory. HRIS 63. ACTIVE

23. b. (11) Fundamental Study on Alluvial Grouting. The performance and effect of chemical grouting of alluvial soils which are relatively loose and sometimes percolated by running ground-water has been studied. G. Miki. HRIS 64. ACTIVE

(12) Methods of In-Situ Test for Soils. The testing of soils by several different methods to compare the results obtained. G. Miki. HRIS 63. ACTIVE

(14) Factors Influencing Mechanical Properties of Steel Fiber Reinforced Concrete. Clarification of influence of fiber geometry. sand percentage in aggretate external vibration and dispersion of fibers. K. Kobayashi. HRIS 25. ACTIVE

(15) Traffic Simulation for Evaluation of Traffic Control Strategies. Development and use of traffic simulation system for analysis of various traffic control measures on urban street network. S. Takaba. T. Hamada. B. Tashiro T. Taniguchi. T. Kaneko. HRIS 54. (Citations) ACTIVE

(18) Transmission of Ground Vibrations Caused by Running Vehicles on Highways. An investigation of the basic characteristics of ground motions caused by moving vehicles on highways. K. Kubo. T. Katayama N. Sato. N. Ohbo. HRIS 23. (Citations) ACTIVE

New Projects

(19) Earthquake Resistant Design of Highway Structures. Fundamental studies on the earthquake resistant design of various highway structures. K. Kubo. T. Katayama. HRIS 25. ACTIVE

(20) Anti-Seismicity of a Tunnel in the Soft Layer. The analyzing of a relationship between maximum dynamic strains of a soft ground tunnel and magnitude and epicentral distance of a past earthquake. Ch. Tamura. K. Kato. HRIS 25. (Citations) ACTIVE

(21) Tremors of the Ground Due to Subway Trains. Tremors due to subway operations have been surveyed at tunnels and vibration and shock tests have been carried out on models. Ch. Tamura. K. Kato. HRIS 63. (Citations) ACTIVE

(22) Stability of Embankment During Earthquakes. Evaluation of this problem is done by vibration failure tests on models constructed on large size shaking tables. Ch. Tamura. K. Kato. HRIS 63. (Citations) ACTIVE

24. TOKYO METROPOLITAN UNIVERSITY (Tokyo Toritsu Daigaku): 1-1. Fukazawa 2-chome Setagaya-ku. Tokyo

(12) Lateral Buckling of Two-Beam Girder with Lateral Bracing. To estimate the buckling strength with lateral lower bracing only before the floor concrete is placed. F. Ito. HRIS 25. ACTIVE

(14) Stabilization of Rock Slopes by Using Rock Bolts. Research on use of bolts in the stabilization of weathered slopes and stonewalls. M. Yamamoto. K. Karata. HRIS 63. ACTIVE

(15) Bending of Parallel Wire Suspension Cables. Theoretical analysis of a wire cable considering deflection under the influence of slipping between wires and tension in the wires. the results to be compared with those measured on a model cable. F. Itoh. HRIS 25. ACTIVE

(17) Research on Signalized Intersection Capacity. To determine the numerical value of signalized intersection capacity. using photographic method. including effects of commercial and turning vehicles on saturation flow. H. Inoue. S. Shikata. HRIS 54. COMPLETE

24. (18) Behavior of Segmental Lining with Elastic Hinges. Studies of the behavior of segmental ring with bolted joints in shield-driven tunnels. M. Yamamoto, H. Kubota. HRIS 25. (Citations) COMPLETE

(19) Supporting Mechanism of Rock Bolt in Tunnel. To illustrate behavior of rock bolts theoretically and apply results in place. M. Yamamoto. HRIS 63. ACTIVE

New Project

(20) Study on Rock Bolting. To study the behavior of simple pattern rock bolting by experiments of two dropping traps. M. Yamamoto. HRIS 63. ACTIVE

25. WASEDA UNIVERSITY (Waseda Daigaku): 4-170, Nishi-Okubo, Shinjuku-ku, Tokyo

(11) Prestressed Concrete Pavement. Study of the modified yield-line analysis as a method for limit State design of prestressed concrete composite slabs. S. Kamiyama. HRIS 25. INACTIVE

26. TOKYO INSTITUTE OF TECHNOLOGY (Tokyo Kogyo Daigaku): 2-12-1, Ookayama, Meguro-ku, Tokyo

(10) Visoelasticity of Asphalt Mixtures. An investigation of the possibility that the dynamic modulus of asphalt mixtures may be determined independently by bulk density of aggregate and the mechanical properties of the asphalt binder. Takashi Watabane, Teruhiko Watanabe. HRIS 31. COMPLETE

(11) Ultimate Properties of Asphalt Mixes. An investigation of failure of asphalt paving mixtures due to bending, and the use of this information in the development of a new pavement design method taking both stress and strain at break into consideration. W. Takashi, W. Teruhiko. HRIS 31. COMPLETE

(12) Improvement of Bus Transportation System. Development of methods to optimize bus routes and schedules in urban areas, considering total cost (construction, operation and time) and reliability of schedules. S. Morichi. HRIS 12. ACTIVE

(13) Methodology for Generating Transportation Network Configurations. A study to develop an applicable method for optimizing transportation network configuration, consideration being given to previous surveys and to total cost and traffic noise. S. Morichi. HRIS 13. ACTIVE

(14) Analysis of Urban Goods Movements with Reference to the Interaction Among Urban Facilities. To establish principles and methodology for analysis and planning of urban goods movements from viewpoint of interaction among urban facilities. S. Kashina. HRIS 13. ACTIVE

(15) Failure Properties of Asphalt Mixtures. To find a method that will predict life of mixtures under repetition of bending stresses. T. Watanabe, T. Watanabe. HRIS 31. (Citations) ACTIVE

(16) Fatigue Characteristics of Asphalt Mixture. Stress vs. strain relationship in bending fatigue test of asphalt concrete made a smooth curve (fatigue failure envelope); this envelope may be applicable in structural design of flexible pavements. T. Watanabe, T. Hayakawa, T. Yamada. HRIS 31. ACTIVE

(17) Fatigue Failure Envelope of Asphalt Mixtures. To predict the fatigue life of asphalt pavement comparing stress and strain of the envelope and calculated results by elastic layered theory. T. Watanabe, F. Tai. HRIS 31. ACTIVE

New Project

26. (18) A Study on the Plastic Flow of Asphalt Mixtures. Creep tests will be run on various asphaltic mixtures to obtain deformation-time relationships. T. Watanabe. F. Tai. HRIS 31. ACTIVE

27. TOKUSHIMA UNIVERSITY (Tokushima Daigaku): 2-1. Minami-Josanjima-cho. Tokushima-shi

(1) Filler in Bituminous Mixtures. A project of fundamental research in the use of fillers. M. Moriyoshi. T. Yamazaki. HRIS 31. ACTIVE

(2) Rheological Response of Asphalt-Aggregate Compositions Under Various Loading Conditions. Tests of creep in compression. tension. and flexure and stress relaxation in compression and tension. to relate rheological properties with test types and compositions and with mechanical properties. M. Moriyoshi. T. Yamasaki. HRIS 31. ACTIVE

(3) Citizen Participation in Highway Developments. To clarify the mechanism of the opposition to highways by citizens. Y. Sadai. HRIS 15. (Citations) ACTIVE

(4) Integrated Park and Ride Policy for Larger Local Cities. To establish a policy for integrated park and ride systems to relieve traffic congestion in the CBD. Y. Sadai. HRIS 16. ACTIVE

(5) Park-and-Ride and Paratransit Feasibility in Larger Local Cities. Based on survey of traffic demands in the city. analyze feasibility by the cost-benefit and cost-effectiveness methods. Y. Sadau. HRIS 13. FUTURE

New Projects

(6) A Study of Freight Movements and Their Rationalization in Urban Areas. Using the Theory of Quantification, the GMDH and multiple regression, demand models and model choice models will be developed for freight movements. Y. Sadai. HRIS 13. ACTIVE

(7) Investigations on the Effective Utilization of Fiber Materials for Sidewalk Concrete Flagstone. A study which showed fiber volume can be reduced by half when pressure compacting or two placement layers are utilized. K. Kohno. S. Nohda. H. Itoh. HRIS 32. (Citations) COMPLETE

28. KANAZAWA UNIVERSITY (Kanazawa Daigaku): 2-40-20. Kodatsuno. Kanazawa-shi. Ishikawa-ken

(7) Subsidence of Roads Due to Underground Shield Construction. To determine by experimentation the theoretical settlement of a road surface when shield work is performed under the road. Y. Nishida. S. Nakagawa. HRIS 24. ACTIVE

(12) Pore Water Pressure and Ground Settlement Due to Repeated Loading. To determine the relation of cumulative pore water pressure in soil. investigate residual shear strain. and develop a method of estimating ground settlement. Y. Nishida. N. Yagi. HRIS 63. ACTIVE

(14) Bearing Capacity of Sand at the Point of a Pile. Experiments with buckling loads on piles in soils under high pressures. Y. Nishida. N. Yagi. HRIS 62. ACTIVE

(15) Ion Effect on pH value of Soil Water System. Qualitative and quantitative study of the effect of the ion in pore water on the pH value of soil water system based on physicochemical theory and its application to subgrade stabilization. Y. Nishida. N. Yaghi. R. Maeda. HRIS 62. ACTIVE

28. (17) Slope Stability under Rain Water Seepage. A study of the stability of slopes and the factor of safety by a time-dependent function of soil permeability. Y. Nishida. N. Yaghi. T. Inadera. HRIS 63. COMPLETE

(18) Physico-Chemical Study of Engineering Properties of Clays. Chemical experiments and physico-chemical calculations for quantitative expressions of absorbed ions in pore water in clays. and its effects on the mechanical properties and structures of clays. Y. Nishida. N. Yaghi. M. Futaki. HRIS 64. ACTIVE

(19) Losses due to Fallen Snow on Highway Traffic. To evaluate quantitatively the adverse effect of snow on vehicular traffic. the decrease in capacity and speed. and to estimate the effects of snow removal work on economic activities. Y. Marsuura. HRIS 40. ACTIVE

(21) Lateral Resistance of Piles from Ground Stress Conditions. A study of pile resistance to lateral pressure in both elastic limit and plastic failure conditions with calculated results compared with other published data. N. Nishida N. Yaghi. T. Kita. HRIS 62. ACTIVE

(23) Fundamental Study of Soil Stabilization by the Use of Flue Gas Desulfurization Waste Products. To determine optimum mix proportions of cement or lime for soil stabilization by the addition of these waste products. S. Hasaba Kawamura. HRIS 62. (Citations) ACTIVE

(24) Modal Split of Person Trips by Trip Purposes. To build up estimation models of modal splits by trip purposes which can respond to changes of transportation network. traffic speed. transport cost. and parking regulation. Y. Matsuura. HRIS 13. (Citations) ACTIVE

(25) A Fundamental Study on Alkali-Aggregate Reaction. To study the effects of particle size and content of reactive aggregates on the expansion of mortar bars. S. Hasaba. M. Kawamura. K. Takemoto. HRIS 35. (Citations) ACTIVE

(26) A Fundamental Study on Soil Stabilization by the Use of Granulated Slag. An examination of the properties of stabilized soil using this slag and flue gas desulfurization by - product. mainly composed of gypsum. A. Hasaba Kawamura. K. Torii HRIS 62. (Citations) ACTIVE

29. CIVIL ENGINEERING DEPARTMENT. TOHOKU UNIVERSITY (Tohoku Daigaku): Aramaki-Aza-Aoba. Sendai

(1) Fundamental Study on a Layered System Such as an Asphalt Covered Concrete Pavement. Study of asphalt overlay on rigid pavement on soil base. T. Fukuda. HRIS 24. ACTIVE

(2) Mechanics of Granular Materials. A study of the properties. both static and dynamic. of granular materials. M. Satake. Y. Kishino. S. Niiseki. HRIS 63. ACTIVE

(4) Fracture Behavior in Rocks. To investigate the uniaxial compressive strength and the mechanism of fracture in specimens made of a mixed material. M. Satake. H. Tano. HRIS 63.

(6) Super Strength Concrete. To make a super strength concrete by using a special water reducing agent. and a study of the ability to place. and its strength and durability. Y. Goto. M. Miura. HRIS 32. ACTIVE

(7) Lap Joint of Deformed Bar. A study of the stress transmission and breaking mechanism of reinforced concrete about a lap joint. Y. Goto. K. Otsuka. HRIS 25. ACTIVE

29. (8) Bond Efficiency of Thick Deformed Bar. To find a relation between the bond efficiency and the shape or pitch of the bar-surface projections. Y. Goto K. Otsuka. HRIS 25. ACTIVE

(11) Creep and Shrinkage of Prestressed Concrete Bridges. A laboratory and field study of creep and shrinkage of concrete. Y. Goto. Y. Osaka. M. Tomon. HRIS 25. ACTIVE

(14) Stress-Strain Characteristics of Granular Materials. To establish a simple deformation rule for granular materials. Also under study are resistance and angle-density relations of the materials. F. Kawakami. N. Moroto. HRIS 35. COMPLETE

(15) Load Carrying Capacity of Steel Arches. A study to analyze the load carrying capacity of steel arches subjected to static load considering the influence of their finite displacement, residual stresses and yielding of material. the objective being to formulate a basic policy for a rational design of arch bridges. Bridge Eng. Lab. HRIS 25. ACTIVE

(16) Vibrational Properties of Suspension Bridges with Dampers. Use of a model and moving loads in a study of the influence of dampers. amount of damping forces and vibrational behavior. the objective being to improve the dynamic properties and wind resistance capacity of suspension bridges. Bridge Eng. Lab. HRIS 25. ACTIVE

(17) Out-of-Plane Behavior of Arch Bridges. An analysis of the out-of-plane behavior of arch bridges considering yielding of material, residual stresses and large deflections. the study including behavior under lateral loads. out-of-plane buckling due to in-plane loads. influence of lateral loads on in-plane carrying capacity. and strength of arches loaded both in-plane and out-of-plane. Bridge Eng. Lab. HRIS 25. ACTIVE

(18) Stress Analysis of Suspension Bridges with Trussed Stiffening Girders. A study to formulate more simplified simultaneous equations expressing the fundamental properties of trusses than those obtained by the conventional matrix method. and to develop a calculation method. Bridge Eng. Lab. HRIS 25. ACTIVE

(19) Strength of Plate Stiffened by Skew Stiffeners. An investigation aimed at reducing the stress of stiffeners to a lower level than that of the stiffened plate by placing the skew stiffeners obliquely to the direction of applied forces. Bridge Eng. Lab. HRIS 25. ACTIVE

(20) Corrosion of Reinforcement in Concrete. A study of corrosion of reinforcement in concrete exposed to sea water. especially the degree of corrosion in relation to thickness of covering. Y. Goto. K. Otsuka. HRIS 25. ACTIVE

(21) Ground Vibration Due to Traffic Loads and its Prevention. Vibrational properties of ground were studied by measurement of acceleration and displacement due to traffic loads. the aim being to develop insulative methods of prevention of this ground vibration. F. Kawakami. E. Yanagisawa. HRIS 23. COMPLETE

(22) Slope Stability of Highway Embankments During Earthquakes. Vibrating properties of soil structures are studied by observing earthquakes and by calculating the responses of mathematical models. F. Kawakami. E. Yanagisawa. HRIS 63. ACTIVE

(24) Stress in Pavement Structure Under Non-Circular Loads. A study to clarify the effects of the shape of the contact area of wheel loads on the stress in pavements by means of theoretical analysis and photoelastic experiments T. Fukuda. HRIS 24. ACTIVE

29. (25) Effects of Wheel Path Distribution on Concrete Pavement Design. Research to analyze the effects of wheel path distribution on concrete pavement design. T. Fukuda. HRIS 24. ACTIVE

(27) Lap Joint of Bundled Reinforcing Rods. Comparision of joint behavior of single and bundled bars. Y. Goto. T. Miura. K. Otsuka. HRIS 25. ACTIVE

(29) Bond Efficiency of Bundled Bars. Comparison of bonding efficiency of single and bundled bars. Y. Goto. T. Miura. K. Otsuka. HRIS 25. ACTIVE

(30) Concrete Pavements Resistant to Chain-Fitted Tires. Application of high strength cement to concrete pavement to resist effects of tire chains. T. Fukuda. HRIS 24. ACTIVE

(31) Performance of Concrete Pavement Slabs in the Case Their Bearing Capacity Being Partially Lacking. To evaluate stress conditions. T. Fukuda. HRIS 24. ACTIVE

(32) Thermal Stress in Statically Reinforced Concrete Structures. To find more rational design for statically indeterminate structures considering temperature changes, drying shrinkage, etc. Y. Ozaka. HRIS 25. ACTIVE

(33) The Anchor Strength of the Deformed Bar. To investigate the group effect on anchor behavior of bars placed close together and in various lengths and numbers. Y. Ozaka. HRIS 25. ACTIVE

(34) Safety in Concrete Structures. To construct economically a durable concrete structure with safety corresponding to its importance. Y. Ozaka. HRIS 25. ACTIVE

(35) Corrosion of the Reinforcing Bars in Blast Furnance Slag Concrete. To determine how to use blast furnace slag safely as aggregate for reinforced concrete. Y. Goto. T. Miura. HRIS 35. (Citations) ACTIVE

(36) Failure Properties of Asphalt Mixtures Under Combined Stresses. To clarify how asphalt mixtures fail under combined stresses. T. Fukuda. S. Murai. HRIS 31. (Citations) ACTIVE

(37) Flexural Behavior of Reinforced Ultrahigh Strength Concrete and Artificial Lightweight Aggregate Concrete Members. To study mechanical properties and fractural behavior of reinforced ultrahigh strength concrete beams and artificial lightweight aggregate concrete beams to establish rational analysis and design methods for such members. Y. Ozaka. HRIS 25. ACTIVE

(38) Effect of Particle Size Distribution and porosity on Compressibility of Granular Soils. Using triaxial testing apparatus, this study will experimentally investigate compressibility of granular soils to provide data on bearing capacity of subgrade. E. Yanagisawa. Y. Tobita. HRIS 62. ACTIVE

(39) Corrosion of Large Reinforcing Bars in Ocean Structures. To study how surface forms of 51--mm bars and thickness of their concrete covers influence corrosion. Y. Goto. T. Miura. HRIS 25. ACTIVE

(40) Fundamental Characteristics of Lime Stabilization and Its Application to Poor Ground. To study fundamental mechanisms and durability of lime stabilization and usefulness of poor ground as subgrade. E. Yanagisawa. T. Nakamura. Y. Tobita. HRIS 62. ACTIVE

29. (41) Analysis of Slope Stability During Earthquakes. F.E.M. analysis plus traditional slice methods to be used in analyzing slope stability in earthquakes, taking into account geometry and environmental factors such as rainfall. E. Yanagisawa. T. Nakamura. HRIS 63. ACTIVE

(42) Durability of Very High Strength Concrete. To study freeze-thaw durability of very high strength concrete (made with super plasticizer and little entrained air) and methods of improving it. Y. Goto. T. Miura. HRIS 32. ACTIVE

(43) Design of Concrete Pavement Slab Supported by Inhomogeneous Bearing Capacity. To study theoretically and experimentally the stress condition in such a slab and examine effect the base course gives the slab. T. Fukuda. HRIS 24. ACTIVE

(44) Ultimate Strength and Design Specifications for Steel Arch Bridges. To illustrate the ultimate strength behavior of such bridges and present a design formula. S. Kuranishi. HRIS 25. (Citations) ACTIVE

(45) Ultimate Strength of Curved Plate Girders and Design Specifications. To illustrate the ultimate strength behavior of such girders and present a design formula. S. Kuranishi. with a team from several universities. HRIS 25. ACTIVE

(46) Constitutive Equations of Soils Under Dynamic Loading. To obtain such equations including the random stress due to earthquakes. E. Yanagisawa Y. Tobita. HRIS 62. ACTIVE

(47) F.E.M. Analysis of Slope Stability Under Earthquakes. Study of slope failures under earthquakes, which differ from dynamic problems of structures such as buildings. E. Yanagisawa. Y. Tobita. HRIS 63. ACTIVE

(48) Fundamental Mechanisms of Frost and Heaving Pressure in Soil and Correlation with Field Measurement. To develop new testing apparatus that will be applicable to the study of deformation and strength characteristics of frozen soil. E. Yanagisawa. Y. Tobita. Y. Sudo. HRIS 64. ACTIVE

30. KAGOSHIMA UNIVERSITY (Kagoshima Daigaku): Kami-Arata-cho. Kagoshima-shi. Kagoshima-ken

(1) Mechanics of Granular Materials. To relate the grain shape to the shear strength of granular materials. M. Haruyama. HRIS 63. INACTIVE

(6) Deformation Characteristics of Highly Compressible Sand. To clarify the relationships between volume change, development of pore pressure and strength of highly compressible sand and differences with ordinary sand. M. Haruyama. HRIS 35. ACTIVE

31. HIROSHIMA UNIVERSITY (Hiroshima Daigaku). Department of Civil Engineering: 8-2 Sendamachi. 3-chome. Hiroshima

(3) Stability of Road Embankments. To find a method to estimate time-settlement rates of road embankments without an assisted acceleration of consolidation. H. Aboshi. N. Nakanodo. H. Yoshikuni. HRIS 63. ACTIVE

(7) Urban Transportation System. Determination of balance point between demand of people and traffic resistance with the constraints of space and environment in urban areas. H. Monden. Y. Sugie. HRIS 13. FUTURE

(8) Bearing Capacity of Deep Foundations. A series of model experiments performed in order to establish a new theory for bearing capacity calculations. H. Aboshi. H. Yoshikuni. H. Nakanodo. HRIS 62. ACTIVE

31. (9) Study on Synthetic Evaluation of Urban Highway. Study of effect of traffic and traffic facilities on people, how to decrease traffic volume, noise and exhaust gases, evaluate effect of safety improvements and simplify traffic forecasting models. H. Monden, Y. Sugie, H. Imada. HRIS 23. (Citations) ACTIVE

32. HIROSHIMA INSTITUTE OF TECHNOLOGY (Hiroshima Kogyo Daigaku): 725 Miyake Itukaichi-cho Saekigun, Hiroshima

(1) Soil Stabilization of Soft Ground by Osmotic Pressure. Stabilizing soft ground by the application of dewatering phenomena of an osmotic type. T. Suzuki S. Shima. HRIS 62. ACTIVE

(2) Vegetation and Erosion Control for Slopes. Studies to evaluate erosion control methods, materials, their effectiveness and ecological relationships, and including causes of collapse and evaluation of fertilization experiments. T. Suzuku, S. Shima. HRIS 23. ACTIVE

33. NIGATA UNIVERSITY (Niigata Daigaku): 1-2-1 Gakkocho, Naoka-shi

Engineering Department: Same address

(1) A New Traffic System Which Will Be Less Affected by Snow-Falls. New Type road has two rails of concrete on which guided vehicles will operate. N. Takahashi, S. Matsuno. HRIS 21. INACTIVE

37. KAJIMA INSTITUTE OF CONSTRUCTION TECHNOLOGY (Kajima Kensetsu Gijutsu Kenkyu-sho): 19-1 Tobitakyu 2-chome, Chofu-shi, Tokyo 182

(21) Embankment Construction. To determine methods of constructing embankments based on typical soils, thickness of layers, rolling equipment, watering, and control methods. O. Suzuki, K. Tanaka, S. Kijima. HRIS 33. ACTIVE

(22) Application of Radio Isotopes in Civil Engineering. Use of new tracer techniques being developed to check grouting in soils, flow of tremie-placed concrete settlement of fills during stabilization with sand drains, and underground water flow. A. Ariizumi, T. Yamamoto, M. Tsuchihiro. HRIS 34. ACTIVE

(23) Stabilization of Soft Ground. Use of quicklime and gypsum for rapid stabilization of soft clayey soils to increase bearing capacity. M. Morikuni, K. Mashiko. H. Kurihara, E. Fukazawa. HRIS 62. ACTIVE

(26) Tunnel Excavation Technique. A study of the relationship between a construction method and the geology and properties of mass rock, by both experimental and theoretical means. N. Okabayashi, H. Tanimoto, K. Aoki. HRIS 63. ACTIVE

(27) Seismic Investigation of Difficulty of Excavation. An investigation of the use of seismic waves to determine soil properties having an influence on excavation so as to select the most suitable excavation equipment. M. Ichikawa S. Kohsaka. HRIS 61. ACTIVE

(30) Rapid Tunnel Lining Method. A study of the use of a new method of concrete lining of tunnels to obtain detailed data on actual use. Y. Nakahara T. Ohtomo, Y. Nakazato. HRIS 33. ACTIVE

(31) Slag-Cement Concrete. To utilize the large amounts of granulated slag as a concrete material. Y. Nakahara, K. Kotani, K. Narahara, S. Hirata. HRIS 32. (Citations) ACTIVE

(32) Steel Fibrous Shotcrete. Application of shotcrete containing steel fibers to tunnel linings and slope stabilization. Y. Nakahara, Y. Nakazato, M. Yurugi H. Sudo. HRIS 32. (Citations) ACTIVE

37. (33) Fiber Reinforced Concrete. To study the effects on properties of fresh concrete by the addition of fibers. Y. Nakahara. M. Yurugi. H. Sudo. HRIS 32. (Citations) ACTIVE

(35) Experiment of Shield Tunnelling Using Fluid Mud. Use of fluid mud to support a working face in saturated sand and gravel. S. Kijima. H. Yokoya. T. Fujimura. T. Tamai. HRIS 33. (Citations) ACTIVE

(36) New Method of Underwater Concreting by Kajima's Double-Tube Tremie Method. Use of a new method that will insure good quality concrete. Y. Nakahara. T. Ohtomo. S. Yokota. T. Naito. HRIS 33. (Citations) ACTIVE

(37) Excavation Works. Study of control of excavations and of the value and distribution of wall-pressure. M. Morikuni. M. Ishitani. Y. Suga. HRIS 33. (Citations) ACTIVE

(38) The Control of Cracking in the Massive Reinforced Concrete. Study of cracking as related to materials, mix proportions, reinforcement, control joints height and thickness of the structure. Y. Nakahara. K. Kotani. M. Yurugi. S. Hirata. HRIS 33. ACTIVE

(39) Prestressed Concrete Cable Stayed Bridges. Study of prestressed concrete cable stayed bridges and their earthquake resistance and aerodynamic stability. Y. Nojiri. C. Mimura. Y. Morimitsu. T. Takeda. HRIS 25. (Citations) ACTIVE

(40) Steel Fiber Reinforced Concrete Pavement. To develop techniques for economical and efficient production of such pavement. Y. Nakahara. M. Yurugi. H. Sudo. T. Tsukada. HRIS 24. ACTIVE

(41) New Soil Stabilization Method for Soft Ground. Experiments with the use of slurry injected into and mixed with soft ground. O. Suzuki. M. Morikuni. K. Mashiko. Y. Suga. HRIS 62. (Citations) ACTIVE

New Projects

(42) The Structural Characteristics of Prestressed Concrete Cable Stayed Bridge. Various mechanical tests including seismic response were made on existing cable stayed bridges to develop design and construction techniques. C. Mimura T. Takeda. Y. Hishiki. HRIS 25. (Citations) ACTIVE

(43) Development and Research on Steel Fibrous Shotcrete. A study of the application of steel fibers to shotcrete to take advantage known improvements in strength and cracking behavior in plain concrete. Y. Nakahara. K. Kotani. Y. Nakazato K. Nishimura. H. Sudo. HRIS 32. (Citations) ACTIVE

(44) A Numerical Study on the Effect of Supports in Soft Rocks Using Tunnel Models. A study using models and rock bolts and thin linings carried out using the New Austrian Tunneling Method. Y. Nakahara. T. Okabayashi Y. Tazawa H. Sudo. T. Sekiya. Y. Nobuta. K. Taira. HRIS 63. (Citations) ACTIVE

42. FUJITA CORPORATION RESEARCH LABORATORIES: 74 Otanacho, Kohoku-ku Yokohama, 223

(1) Fabric and Properties of Kanto Loam. An electron microscope study of the fabric of kanto loam, in order to improve the understanding of its engineering properties. M. Kamata. K. Ishiyama. HRIS 61. INACTIVE

(3) Pollution Control Apparatus for the Tunnel. Develop a unitary apparatus able to remove dust and gas in tunnels. HRIS 23. ACTIVE

JAPAN (contd)

New Projects

37. (4) New Austrian Tunneling Method. A study of the behavior of a tunnel wall excavated by NATM and on experimental study of shotcrete for NATM. S. Sakamoto, Y. Hosokawa, and others. HRIS 25. (Citations) ACTIVE

(5) Soft Soil Improvement Method. A study of various methods of improving soft soil and development of design method for soft soil improvement. T. Ishii, S. Sako, and others. HRIS 62. (Citations) ACTIVE

44. KAJIMA INSTITUTE OF ROAD TECHNOLOGY: 2-19-1 Tobitskyu, Chofu, Tokyo

(3) Model Tests on Effect of Rock Bolts and Thin Linings as Tunnel Supports in Soft Rock. To study the effectiveness of rock bolts and thin linings as tunnel supports by model tests. Y. Nakahara and others. HRIS 63. (Citations) ACTIVE

45. KYUSHU INSTITUTE OF TECHNOLOGY: 1-1 Sensuicho, Tobataku, Kitakyushu, Fukoaka-ken

a. Department of Civil Engineering: Same address

(2) Slag as a Subbase Material. An experimental study of the use of slag for subbase material due to a lack of crushed stone. T. Idemitsu, T. Okabayashi, H. Tokieda. HRIS 35. ACTIVE

(3) Traffic Flow in Kitakyushu Area. A mathematical model study of the car following theory as a means of relieving areas of traffic congestion. D. Sasaki, S. Tanaka. HRIS 55. INACTIVE

(4) Converter Slag Used as a Subbase Material. Use of a mixture of granulated and coverter slag (60:40 to 70:30) as a subbase material, the granulated slag absorbing the usual swell of coverter slag. T. Idemitsu, T. Saruwatari, K. Nakahira. HRIS 35. ACTIVE

(5) Road Traffic Noise at Signalized Intersections. Analysis of factors influencing noise at these intersections, such as traffic volume, mixture of heavy trucks number of lanes, kind of pavement and surrounding conditions. Y. Watanabe. HRIS 17. (Citations) ACTIVE

50. RITSUMEKAN UNIVERSITY: Department of Civil Engineering, Tosi-in, Kita-ku, Kyoto

(1) Compaction Characteristics of Decomposed Granite Soils. To investigate from both experimental and theoretical bases, the effect of particle breakage on compaction characteristics of decomposed granite soils. T. Fukumoto. HRIS 62. ACTIVE

(2) Propagation of Ground Vibration Caused by Traffic Facilities. A study of vibrations in the ground caused by traffic, and an attempt to find ways to screen out such vibrations, H. Hotakeyama, K. Hayakawa. HRIS 23. COMPLETE

(3) Effect of Particle Breakage on Permeability of Decomposed Granite Soils. To investigate particle breakage due to compaction and its influence on permeability of decomposed granite soils. T. Fukumoto. HRIS 64. ACTIVE

(4) Ground Vibrations Caused by Traffic. A study of the properties of ground from the characteristics of microtremors and vibration caused by traffic. N. Hatakeyama, K. Hayakawa. HRIS 17. COMPLETE

(5) Estimation Method of Ground Vibration Caused by Traffic Facilities. A study of ground vibrations and ways to estimate them. H. Hatakeyama, K. Hayakawa. HRIS 17. ACTIVE

50. (6) Influence of Particle Breakage on the Shearing Behavior of Decomposed Granite Soil. To analyze the influence of particle breakage in the mechanical properties of decomposed granite soils, stress-strain relation, shear strength, dilatancy, mode of failure, etc. T. Fukumoto. HRIS 64. ACTIVE

(7) Evaluation Method for Interchange Design. To develop a systematic method for evaluating and weighting opinions from all interests concerned in installing a complicated interchange, and for evaluating all alternative designs, using operations research techniques. Y. Makigani. HRIS 21. (Citations) ACTIVE

New Projects

(8) Vibration Characteristics of Viaduct Caused by Traffic. To investigate natural period and damping constant of structure due to free oscillation. N. Hatakeyama, K. Hayakawa. HRIS 25. ACTIVE

(9) Basic Study on Freeway Merging Model. To develop a mathematical model to simulate traffic behavior in a freeway merging area in both queueing and non-queueing modes. Y. Makigami. HRIS 55. ACTIVE

51. SHINSHU UNIVERSITY, FACULTY OF ENGINEERING: Wakasato 500 Nagano City

(1) Probabilities of Traffic Information. To examine the characteristics of traffic volume, time occupancy, space occupancy, density and speed in connection with the accuracy of the detection of such information. I. Omutani. HRIS 55. ACTIVE

(3) Photoelastic Coating Method Applied to the Analysis of Concrete Structures. Studies to expand the photoelastic coating method, as used to obtain the principal stresses in steel structures, to include concrete structures. S. Yoshida. Y. Mitsui. HRIS 25. ACTIVE

(5) Traffic Signal Synchronization. To optimize common cycle time, splits and offsets for an oversaturated street network. I. Okutani. HRIS 54. (Citations) ACTIVE

52. THE GEOGRAPHICAL SURVEY INSTITUTE: 3-14-13 Higoshiyama, Meguroku, Tokyo

(1) Probability of Slope Disasters along the National Highways. A study of the probability of slides along highways, due to undercutting and other causes. HRIS 63. ACTIVE

(2) Forecasting Method for Geomorphological Disaster along the Highway. A study of disaster, caused by landslides, rock collapse, debris flow in mountainous areas and development of countermeasures to provide for safe travel on the highway. HRIS 63. ACTIVE

54. KURE TECHNICAL COLLEGE: 2-2-11 Agaminami, Kure City Hiroshima

(1) Slope Failure of Stratified Rock. A model experiment on the slope failure mechanism of stratified rock carried out with blocks of vinyl chloride. Y. Ishii, T. Nishitani. HRIS 63. ACTIVE

(2) Effect of Rock-Bolt for Jointed Rock. Experiments on the slope stability of bolted vinyl chloride blocks to determine reasonable intervals and driving direction of the rock bolts. Y. Ishii. HRIS 63. ACTIVE

55. DIVISION OF CONSTRUCTION, METROPOLITAN GOVERNMENT OFFICE: 3-1 Marunouchi, Chiyoda-ku, Tokyo

(1) Prevention of Traffic-Caused Road Vibration. To investigate the causes of vibration, develop instruments to measure it, and develop means to prevent or mitigate it. HRIS 23. ACTIVE

55. (2) Permeable Pavements. Investigation of a permeable asphalt pavement that would allow rain water to percolate into the earth and help prevent drying up of underground water, providing water for trees. HRIS 24. ACTIVE

(3) Method for Setting up Guide Sign. To improve the method for signing the highway network in Tokyo to help both motorists and pedestrians. HRIS 54. ACTIVE

56. TOYATA TECHNICAL COLLEGE: Eisei-cho 2-1, Toyata City, Aichi-pref

(4) Area Traffic Control Schemes for Medium and Small Cities. To develop means for adapting traffic control schemes to all size cities. Y. Kurimoto, H. Ogino. HRIS 54. COMPLETE

(5) Traffic Accident Analysis by Statistical Method. To point out the relationship between traffic accidents and such other factors as traffic regulation, facilities and to establish effective maintenance of safety facilities and regulation. Y. Kurimoto, H. Ogino. HRIS 51. ACTIVE

New Project

(6) Development of New Observation Method Using Mini Airship. To develop a method of taking video or cinefilm by camera mounted in a mini airship over isolated traffic situations. Y. Kurimoto, H. Ogino, K. Noda. HRIS 55. ACTIVE

58. KINKI UNIVERSITY: DEPARTMENT OF CIVIL ENGINEERING: Kowakae 321, 577 Higashi City, Osaka

(1) Disabled Person Trip Policy. A study to determine what needs to be done to provide transportation and pedestrian facilities for old and disabled persons. A. Mihoshi. HRIS 16. FUTURE

59. MIYAZAKI UNIVERSITY, DEPARTMENT OF CIVIL ENGINEERING 1-1-1 Kirishima Miyazaki-shi

(1) Deformation Characteristics of Unsaturated Soils. An examination of the deformation characteristics of unsaturated cohesive and non-cohesive soils by dynamic triaxial compression apparatus. F. Hiroshi, Y. Hiroshi. HRIS 62. ACTIVE

(2) Deformation Characteristics of Volcanic Ash Soil "SHIRASU". Study of the non-linear alteration of deformation coefficients with stress-strain relations of "SHIRASU". H. Fujimoto, H. Yokota. HRIS 62. (Citations) ACTIVE

(3) Quantitative Evaluation and Planning of Highway Landscapes. To establish an evaluation method for highway landscaping in the environmental impact assessment of road construction. H. Fujimoto. HRIS 23. ACTIVE

(5) Earthquake Resistance of Prestressed Concrete Continuous Box Girder Bridge Constructed by Dywidag Method. H. Tsutsumi, H. Yokota, T. Nakazawa. HRIS 25. (Citations) ACTIVE

New Project

(6) Earthquake Resistance of a Bridge Being Constructed by Dywidag Method. An investigation of the overturning forces on a bridge being erected when the essential elements are a pier supporting a continuous beam on each side all in the shape of a "T". H. Tsutsumi, H. Yokota, T. Harada, M. Sezaki. HRIS 25. (Citations) ACTIVE

(7) Development of Instrument for Underground Stress Measurement. For investigation of the redistribution of earth pressures caused by trenching or tunneling. Y. Murakami, T. Nakazawa, M. Sezaki. HRIS 63. ACTIVE

60. KEIO UNIVERSITY, DEPARTMENT OF ADMINISTRATIVE ENGINEERING: 3-14-1 Hiyoshi, Kohoku-ku, 223, Yokohama, Kanagawa-ken

(1) Short-Term Prediction of Urban Vehicle Traffic Flow. Analysis, modeling and estimation of urban vehicle traffic flow for a design of an urban traffic system. Y. Hayashi, H. Kawashima, Y. Anzai. HRIS 55. ACTIVE

(2) Route Guidance System Design in an Urban Area. To study basic concepts and software techniques for designing route guidance system. Y. Hayashi, Y. Anzai, H. Kawashima, Y. Yamomoto. HRIS 54. (Citations) ACTIVE

(3) Estimation and Prediction of Traffic Flow. To estimate parameters governing travel time from traffic volume and to predict travel time from past data. Y. Hayashi, H. Kawashima, Y. Yamamoto. HRIS 13. (Citations) ACTIVE

61. BUILDING RESEARCH INSTITUTE (Kenchikukenkyusho): 1 Tatehara, Oho-cho, Tsukubagun, Ibaraki-ken, Tokyo

(1) Simulation Method for Urban Transportation Planning. To produce a simulator and develop computer programs in order to evaluate alternative plans for urban transportation. S. Nakagawa. HRIS 13. ACTIVE

(2) Effective Utilization of Urban and Housing Resources. A study to determine more effective use of transportation facilities, more efficient use of space and public utilities and to obtain optimum use of each transport mode from energy conservation standpoint. I. Tanashi, S. Nakagawa, T. Kurokawa. HRIS 15. ACTIVE

(3) Buffer Buildings along an Arterial Street and Their Impacts on Nearby Communities. To study the feasibility of constructing buffer buildings to attenuate traffic noise as well as their impacts on nearby communities. T. Kurokawa, H. Morioka. HRIS 23. ACTIVE

(4) Study of Estimation Methods of Urban Travel Demand for Simplification. Comparative study on a disaggregate model, the four step model and method based on census data is being made for efficient evaluation of alternative urban transportation plans. T. Kurokawa, H. Morioka. HRIS 12. ACTIVE

(5) Simulation Method for Urban Transportation Planning. To produce a simulator and develop computer programs in order to evaluate alternative urban transportation plans. T. Kurokawa, H. Morioka. HRIS 12. ACTIVE

New Projects

(6) Transportation Planning Method for Small District in Urban Area. To study transportation planning for a small district in urban area. M. Asano, H. Matsutani. HRIS 12. ACTIVE

(7) Improvement Standards of Street Network in Urban Area. To study evaluation methods for the improvement standards of network based on urban form and activity distribution. Staff. HRIS 12. ACTIVE

(8) Evaluation Method of Energy Consumption in Urban Transportation Planning. To develop method of energy evaluation in transportation planning taking into account transportation mode, demand and urban structure. M. Asano, H. Matsutani. HRIS 17. ACTIVE

62. MURORAN INSTITUTE OF TECHNOLOGY: DEPARTMENT OF CIVIL ENGINEERING (Muroran Kogyo Daigaku): Mizumoto-cho, Muroran, Hokkaido

(1) Developing Model and Procedures for Evaluating Safety of Highway System. To develop a method for evaluation, conduct a pilot study, develop data collection system, and establish the procedures. K. Saito, K. Ishii. HRIS 51. ACTIVE

62. (2) Modeling Traffic Accident Causation System. To formulate a system, define accident contributing factors, and to consider countermeasures. K. Daito. HRIS 51. ACTIVE

(3) Stress Characteristics of Three-Dimensional Trussed Bridge. Use of models of truss bridges subjected to static and dynamic loadings to clarify the difference between stress characteristics of actual three-dimensional truss bridges and those theoretically calculated on basis of plane truss theory. S. Nakamura. HRIS 25. ACTIVE

(4) Development of a Statistical Method to Determine the Hazardous Locations of Highway. To develop methods of identifying hazardous highway locations using the multivariate analysis technique. K. Saito. HRIS 51. ACTIVE

(5) Development of the Selective Enforcement Planning Method by Use of Electronic Computer. An analysis of time-series variation of accident occurrence to detect a worsening change of accident causation process for planning selective enforcement. K. Saito, K. Ishii. HRIS 51. ACTIVE

63. NRCDP SNOW AND ICE STUDIES: Suyoshi-machi, Nagaoka-shi, Niigata-ken

(1) Compacted Snow and the Method of Disposal. A study of the mechanism of the origination of compacted snow and the best way to deal with the problem. HRIS 40. COMPLETE

(2) Compacted Snow on Road and Method of Disposal. Study the mechanism of the origination of compacted snow and the best way to deal with the problem. K. Isobe, T. Kobayashi, H. Miyamura, H. Kuruyama. HRIS 40. COMPLETE

(3) Hauling System of Snow-water Mixture by Bladeless Pump. A study on the relationship between various volumes and nature of snow, carrying capacity required energy and carrying mechanism through pipe, using a pump. H. Kuriyama, I. Nohara. HRIS 40. ACTIVE

(4) Study of Traveling Performance of Pneumatic Rubber-tire and Tracked Vehicle on Snow Covered Road. Study of various types of crawlers and tires on snow covered roads as affected by temperatures, snow depth, ice formation, etc. H. Kuriyama, I. Nohara. HRIS 40. ACTIVE

64. METROPOLITAN EXPRESSWAY PUBLIC CORPORATION 1-4-1 Kasumigaseki, Chiyoda-ku, Tokyo

(28) Influence of Cracks on Reinforced Concrete. Use of several types of R. C. beams, with mechanically produced cracks and exposed to weathering action for long periods of time in research to include distribution and size of cracks, rusting of reinforcing, neutralization of concrete, and lowering of strength of beams. T. Akimoto, S. Tomizawa. HRIS 25. ACTIVE

(29) Ultimate Strength of Concrete Columns Under Seismic Loads. A study of the behavior of concrete piers subjected to high cyclic loads especially the difference of ductility and the effect of hoop reinforcement. M. Kato, T. Akimoto, S. Tomizawa. HRIS 25. COMPLETE

(30) Analysis of Seismic Records in Tokyo. Use of accelerograph and seismograph records from urban freeways in Tokyo in calculations, with seismic characteristics of the structure and grounds related with earthquake forces, in order to produce data and information for dynamic design. Design Sec.-Eng. Dept. HRIS 63. ACTIVE

(33) Forecast of Rutting Depth in Elevated Expressways by Statistical Methods. To develop an equation for forecasting rut depth using methods of statistical analysis on the factors affecting rutting. K. Yanagida, N. Komatsu, H. Kikkawa, Maintenance Division. HRIS 24. ACTIVE

New Projects

64. (34) Socio-Economic Effects of Tokyo Expressway. Estimating socio-economic effects of Tokyo Expressway by models for socio-economic effects and to allocate these effects to wards. S. Numata. K. Takebe. H. Takeda Planning Department. HRIS 15. ACTIVE

(35) Vibration Test of the Model Substructure at Tokyo Bay. Avibration test on a model of the substructure of proposed Yokahama Bay cable stayed bridge for improved seismic design. S. Naitoh. Kanagawa Branch. HRIS 25. ACTIVE

(36) Aerodynamic Stability of Yokahama Bay Bridge. Wind tunnel tests are planned on a section model and full span model to determine aerodynamic behavior of proposed cable stayed. trussed girder bridge. S. Naitoh. Kanagawa Construction Bureau. HRIS 25. ACTIVE

65. FACULTY OF CIVIL ENGINEERING. AKITA UNIVERSITY: 1-1 Tegata Gakuen-cho Akita-shi. Akita

(3) Experimental Study on Dynamic Properties of Organic Soils and Clayey Soils. Comparative study in the laboratory of the dynamic properties of the soils under dynamic forces. H. Oikawa. HRIS 61. ACTIVE

(5) A Study on Generated Traffic from Viewpoint of Regional Characteristics. Analysis of generated traffic from viewpoint of regional characteristics in terms of transportation planning. K. Shimizu. HRIS 15. ACTIVE

(6) Dynamic Analysis of Curved Girder Bridges. Using a numerical approach to rigorous analysis of curved girder systems to develop analytical methods in which the effect of in-plane displacement of curvature can be considered or ignored: a number of bridges with practical geometries are to be solved. T. Kano. S. Uzuki. K. Hasebe. HRIS 25. (Citations) ACTIVE

(7) Formation of Urban Complex by Sharing Urban Functions. To clarify the "transfigured conditons of Urban Complex" due to development of transportation facilities. K. Shimizu. HRIS 13. (Citations) ACTIVE

(8) Spatial Change in Urban Area. Analysis of spatial changes in city region. K. Shimizu. HRIS 13. FUTURE

(9) Open Space for Pedestrians in Central Business District. To study open space for pedestrians which must handle high pedestrian traffic densities in central business districts (CBD's). K. Shimizn. HRIS 13. ACTIVE

New Projects

(10) A Study on the Role of Streets in CBD. A study of urban streets including role of open spaces in the central business district. K. Shimizu. HRIS 12. ACTIVE

(11) Analysis of Flat Plate in Bridge. To obtain an analytical method giving evaluation thick flat plates in bending for evaluating resistance of Japanese highway bridge slabs. T. Kano. S. Usuki. K. Hasebe. HRIS 25. ACTIVE

(12) Study on the Resistance of Curved Girder Bridges. The study gives the exact equations for curved girder bridges in large deflections and design criteria will be developed. T. Kano. S. Usuki. K. Hasebe. HRIS 25. ACTIVE

66. HONSHU-SHIKOKU BRIDGE AUTHORITY: 3-1-15 Kosei-cho. Okayama City 1700

(1) Dynamic Behavior of Suspension Bridge Pier Models. To obtain an indication of dynamic behavior of anchorage and tower pier foundations on several prototype bridges. T. Okada. A. Nitta. HRIS 25. ACTIVE

66. (2) Fatigue Test of Large Size Prototype Specimens. To obtain an indication of fatigue strength of 80 kg. mm^2 high strength steel. used for hangers. cables trusses etc. H. Sawai. A. Okukawa. HRIS 25. ACTIVE

(3) Design of Foundations on Slopes. Foundation designs including consideration of bearing capacity. distance from edge of foundation to top of slope earthquake resistant design. etc. Staff. HRIS 62. ACTIVE

(4) Investigation of Bearing Ground and Capacity of Hinshu-Shikoku Bridge Foundation. Bearing capacity. settlement. sliding on gravel or soft rock. Staff. HRIS 62. ACTIVE

(5) Model Experiments on Multi-Column Foundation. Study the structural characteristics and loading capacity of the multi-column foundation with free length above ground. to be used on the bridge. Staff. HRIS 62. ACTIVE

(6) Earthquake-Resistant Design Bridges with High Piers. To study dynamic behavior of combined railway and highway bridges with high piers and pile foundations during earthquakes. Staff. HRIS 62. ACTIVE

(7) Orthotropic Steel Plate Deck Deformation. To obtain most suitable design method for this type deck to be used on the bridge. considering possible influence on the pavement. Staff. HRIS 25. ACTIVE

(8) Light Pavement Over the Orthotropic Steel Plate Deck. To design a light-weight stable. and durable pavement for the deck. Staff. HRIS 24. ACTIVE

(9) Earthquake-Resistant Design for the Combined Highway and Railway Truss Bridge. To determine the behavior of a double deck truss bridge at time of an earthquake. and to design for this eventuality. Staff. HRIS 25. ACTIVE

(10) Impact of Cable-Stayed Girder Bridges which Carry Highway and Railway. Study of impact and dynamic response to trains on such bridges. Staff. HRIS 25. ACTIVE

(11) Design of Cable Bands for Suspension Bridge. To establish criteria for dimensions of cable bands with safety factors for slide and failure. Staff. HRIS 25. ACTIVE

(12) Buckling Strength of Stiffened Plates Subjected to Bending and Compression. To establish design criteria for stiffened plates. Staff. HRIS 25. FUTURE

(13) Fatigue Strength of Hanger Rope for Suspension Bridges. Staff HRIS 25. ACTIVE

(14) Fatigue Behavior of Gusset Plates at Panel Points of a Warren Truss. Staff. HRIS 25. ACTIVE

(15) Aerodynamic Stability of Suspension Bridges. Scale model tests in a wind tunnel of the effects of wind on the bridge. Staff. HRIS 25. ACTIVE

(16) The Secondary Stress of Cables for Suspension Bridges. To estimate accurate secondary stresses of cables to determine reasonable allowable stress. Staff. HRIS 25. ACTIVE

(18) Bearing Stress at the Bases of Suspension Bridge Towers. To obtain stress distribution and bearing strength at the base of these towers. HRIS 25. ACTIVE

New Project

(19) Probabilistic Analysis of Suspension Bridge Safety Factors. A probabilistic factor incorporating the major loadings as well as three patterns of permanent. sustained and short term loads has been added to the present analytical model. M. Shinozuka. M. Kubo. S. Murase. HRIS 25. COMPLETE

67. CIVIL ENGINEERING DEPARTMENT. MUSASHI INSTITUTE OF TECHNOLOGY 1-chome Tamazutsumi Setagaya-ku. Tokyo

(2) Quantitative Vibrational Sensation and Its Application to Bridge Design. A study of the perception thresholds of vibrational sensations of pedestrians on bridges. so that relations between vibrations and design parameters can be applied to design criteria. T. Nishiwaki. HRIS 25. ACTIVE

(3) Estimation Model of Modal Split. Development of model of modal split using 1971 Tokyo traffic survey. K. Kawaura. T. Tanaka. HRIS 12. ACTIVE

(4) Noise and Vibration of Road Traffic. Study of characteristics of road noise and vibrations to develop an estimation model. K. Kawaura. H. Ohno. HRIS 17. ACTIVE

(5) Study of Estimation Models of Modal Split. Study of modal split models for Tokyo Metropolitan Area based on 1971 Survey data. K. Kawaura. T. Tanaka. HRIS 12. (Citations) ACTIVE

68. SHIBAURA INSTITUTE OF TECHNOLOGY. ENGINEERING LABORATORY 3-9-14 Shibaura. Minato-ku. Tokyo

(1) Utilization of Waste Rubber Tires for Asphalt Admixture. To develop a processing method for waste rubber tires to produce a rubber admixture for a rubber-asphalt pavement. T. Okita. R. Takagi. HRIS 31. INACTIVE

70. SCIENCE UNIVERSITY OF TOKYO DEPARTMENT OF APPLIED MATHEMATICS 1-3. Kagurazake. Dhinjuku-ku. Tokyo 162

(1) Analysis of Road Surface Roughness. Use of a number of intersecting points of a datum level with observed road surface to determine degree of roughness. K. Iwase. N. Yamaki. HRIS 24. ACTIVE

(2) Measurement of Road Surface Texture. To study statistical properties of measurements of road surface texture. using photogrammetry and other methods. K. Iwase. HRIS 24. (Citations) ACTIVE

71. OSAKA TECHNICAL COLLEGE (Osaka Kogyo Koto Senmon Gakko): Ikedanaka. Neyagawa. Osaka 572

(1) Investigation of Breaking Asphalt Pavement and Locally Situated Circumstances. A correlation analysis of partly broken asphalt pavements after some ten years usage. to determine effects of surface. bases and subbases. T. Himeto. HRIS 24. ACTIVE

(2) Characteristics of Bicycle Traffic. Analyses of bicycle use with type of cycle and ride. running behavior of bicycles. etc. S. Takagishi. HRIS 55. (Citations) ACTIVE

72. TOTTORI UNIVERSITY 1-1 Koyama-cho. Tottori City

(1) Experimental Relationship Between Soil Strength and Suction Pressure. To clarify the relationship between soil strength and suction pressure for fine-grained loamy soils. H. Fujimura. T. Katsumi. H. Kiyama. HRIS 64. ACTIVE

(2) Tunnel Supports and Lining in Rock. To develop rational systems for tunnel supports and lining. H. Kiyama. H. Fujimura. T. Katsumi. HRIS 63. (Citations) ACTIVE

(3) Bearing Capacity of Foundations and the Stress in Soil Ground. Studies of bearing capacity with slope. lateral resistance and bearing capacity of pile foundations pullout resistance of earth anchors. etc. T. Katsumi. H. Kiyama H. Fujimura. HRIS 62. (Citations) ACTIVE

73. NAGASAKI UNIVERSITY. FACULTY OF ENGINEERING. DEPARTMENT OF CIVIL ENGINEERING 1-14 Bunkyo-cho. Nagasaki

(1) Study on the Sheetpile. Model tests and analysis of behavior of weak soil embankments and sheetpile usage. T. Iseda. Y. Tanahasi. HRIS 62.
ACTIVE

(2) Total Cost Optimum Design of Steel Bridge Using Suboptimization. Use of the sequence of unconstrained minimization technique by suboptimization to optimize steel bridge design taking into account shop fabrication costs. Y. Konishi. HRIS 25. (Citations)
ACTIVE

74. KOZO KEIKAKU ENGINEERING. INC.: 38-13-4-chome. Honcho. Nakano-ku Tokyo

(1) Computer Aided Planning in Road Construction System. To develop a complete system of accomplishing final road construction from the planning through successive stages. utilizing computer and other electronic and photographic aids. Y. Hagiwara. T. Kakimoto. T. Mino. T. Izumida. HRIS 21.
ACTIVE

(2) Automatic Execution of DTM and General Design System of Roadway. To develop automatic extraction of DTM from aerial photographs and the stage of drawing maps and at intermediate utilization of them as geographical information for selection of routes and roadway design. Y. Hagiwara. T. Mino. T. Izumida. T. Tokuyama. HRIS 21. (Citations)
ACTIVE

75. OHBAYASHI ROAD CONSTRUCTION CORPORATION LTD. (Obayashia Doro Gijutsu Kenkyusho): 2-17 Numakage Urawa-shi. Saitama-ken 336

(1) Use of Epoxy Asphaltic Concrete on Steel Bridge Deck. To determine mixture design and develop paving equipment and methods. S. Ibukiyama. K. Hayashi. T. Tashiro. HRIS 34.
COMPLETE

(2) Improvement of Bituminous Binder. To develop improved asphaltic binders using such additives as atactic polypopylene and dibenzilidensorbitol. M. Misusawa. T. Oshima. T. Kohima. M. Kitajima. HRIS 31.
COMPLETE

(3) Steel Fiber Reinforced Concrete. To improve the durability of cement concrete pavements using expansive cement and a steel fiber additive. S. Ibukiyama. S. Kokubun. HRIS 32.
COMPLETE

(4) Recycling of the Asphalt Concrete Materials. Study of plant and procedures for reusing old torn up asphalt pavements. S. Ibukiyama. T. Takasu. T. Takahashi. M. Hamaguchi. HRIS 31.
ACTIVE

(5) The Utilization of Gypsum. Study of ways to utilize large quantities of gypsum resulting from removal of sulfurous acid from gases. as soil stabilizer. filler in bituminous pavements. or admixture in concrete. K. Hayashi. M. Harada. M. Hamaguchi. S. Kckobun. HRIS 34.
COMPLETE

(6) Open Graded Epoxy Asphalt Friction Course. To develop an open graded asphalt mixture that will improve skid-resistance. minimize hydroplaning effects and splash and spray during wet weather and minimize wheel path rutting. S. Ibukiyama. T. Takasu. HRIS 24.
COMPLETE

(7) Development of Surface Materials for Light Traffic. To investigate the use of asphalt emulsion-cement binder with additives as surface materials for light traffic roads that will be more durable. S. Ibukiyama. T. Ohshima. HRIS 31.
COMPLETE

76. TAKENAKA TECHNICAL RESEARCH LABORATORY: 2-5-14, Minami-suna, Koto-ku, Tokyo

(2) Stability and Settlement of Embankment of Peaty Soil. Field and laboratory testing of consolidation of peaty soils on which to build roads. M. Nakazaki, T. Ueda. HRIS 62. ACTIVE

(3) Study of Transportation System in Urban Area. To develop a method of selecting best operational pattern for a given traffic network and demand. H. Nakazaki, T. Ishise. HRIS 12. INACTIVE

(4) Dynamic Properties of Soil. Investigations, using ultrasonic wave propagation tester, dynamic uni-axial compression tester, and dynamic direct simple shear tester, of dynamic mechanical properties of soils. HRIS 63. ACTIVE

(6) Takenaka Deep Chemical Mixing (DCM) Method. Study of deep chemical mixing method to stabilize soil bases and subbases. T. Kawasaki and others. HRIS 62. ACTIVE

(7) Research on Method for Reducing Negative Skin Friction. To perfect new type of pile with coating of lubricant and polyester film designed to reduce negative friction caused by consolidation of surrounding soil. T. Kawasaki, M. Tomono, N. Ohki. HRIS 62. COMPLETE

New Project

(9) The Method to Predict Early Thermal Cracking in Thick Concrete Walls. A method is presented to calculate the induced restrained thermal stress in massive concrete structures. Y. Yoshioka, T. Yonezawa. HRIS 25. ACTIVE

77. RESEARCH INSTITUTE, GOYO KENSETSU CO. LTD.: 1-13-1 Nihonbashi Shuo-ku Tokyo

(1) Method of Microwave Sea-Bottom Rock Breaking. A study of the use of microwaves to break rocks on sea-bottoms, by means of dielectric heating. J. Matsuda, K. Mori. HRIS 63. INACTIVE

(2) Relationship Between Stress Ratios at Initial Liquefaction and Compressibility of Sand. An examination of the close correlation between stress ratio at initial liquefaction and the compressibility determined by static drained triaxial compression tests, which is independently determined by kinds and density of the sand material. G. Imai, Y. Kawahara. HRIS 62. INACTIVE

78. TECHNICAL RESEARCH INSTITUTE, TAISEI CORPORATION: Mita Kokusai Building, 1-4-28 Mita, Minato-ku, Tokyo

(1) Prevention of Liquefaction of Sandy Soils. To discover the best way to prevent liquefaction of sandy soils. M. Tanaka. HRIS 62. ACTIVE

(3) Precast Concrete Truss. To develop a construction method using precast concrete trusses (including space trusses). T. Mogami. HRIS 25. COMPLETE

(4) Experiments on Thermal Stresses of Mass Concrete. To clarify quantitatively the growth of cracks in mass concrete attributable to thermal stresses. E. Tazawa. HRIS 32. ACTIVE

(5) Steel Fiber Concrete. To develop specifications and design methods for use of steel fiber concrete for structural elements, including fundamental and mechanical properties. T. Nishigaki. HRIS 32. ACTIVE

(6) Handy Analysis Method for Fresh Concrete on Site. To develop handy methods of obtaining cement and aggregate content of fresh ready-mixed concrete instantly on site. M. Mori. HRIS 32. COMPLETE

78. (7) Manufacturing Method for Precast Concrete Members. To develop methods of manufacturing precast concrete members of complicated geometry using pre-packed concrete. Y. Yamamoto. HRIS 33. COMPLETE

(8) Snowdrift. To develop ways to minimize drifting of snow on roads and building lots by use of snow fences, and thus to reduce snow removal work. Y. Tsuchiya. HRIS 40. COMPLETE

(9) Soil Improvement by Flight Auger Method. To improve soft soil by auger drilling, forming sand piles and accelerating consolidation without vibration and noise. Y. Wakame. HRIS 62. COMPLETE

(10) Simulation of Vibration in Earth. To set up simulation model of wave propagation of vibrations caused by explosions or pile driving through earth or rock. K. Nakao. HRIS 62. COMPLETE

(12) Prevention of Landslides. To prevent landslides by electrochemical treatment. S. Kaneko. HRIS 63. COMPLETE

(13) Handy Shearing Tests on Rocks in Situ. To set up a handy method for shearing tests of rocks in situ. T. Kizawa. HRIS 63. COMPLETE

79. RESEARCH LABORATORY OF NIPPON HODO COMPANY, LTD.: 3-32-34, Higashi-shinagawa, Shinagawa-ku, Tokyo

(1) A Study of Vibratory Compaction of Granular Materials. To analyze the effect of vibratory compaction from viewpoint of soil dynamics, based on both field and laboratory testing. T. Momoi. HRIS 62. COMPLETE

(2) Influences of Hardness of Fine Aggregate for Road Construction on the Properties of Asphalt Mixture. To establish a standard for judging the applicability of various types of sand. HRIS 35. COMPLETE

(3) Abrasion Resistant Portland Cement Concrete for Pavement. Select the types of portland cement concrete having properties of abrasion resistance as well as skid resistance, and suitable construction methods. T. Inoue, T. Asada. HRIS 32. (Citations) COMPLETE

(4) Utilization of Byproduced Gypsum for Road Material. To find ways to utilize such gypsum, produced as byproduct of desulphurization, as an additive for subgrade and subbase material. T. Hayama. HRIS 34. COMPLETE

(5) Recycling of Asphalt Pavement Material. Study of recycling aged asphalt concrete material and reusing it at the site. Y. Suzuki. HRIS 34. ACTIVE

New Projects

(6) Optimum Condition of Soil Compaction and Pavement Structure. To find the optimum condition of compacting subgrade and base materials for developing a new pavement design. M. Mizobuchi. HRIS 24. ACTIVE

(7) High Stability and High Durability of Asphalt Mixture by Compacting Effort. To study whether asphalt mixtures difficult to compact can be compacted by high capacity equipment for resistance to plastic deformation. T. Inoue. HRIS 31. ACTIVE

(8) Quality Classification of Decomposed Granite Soil and Its Utilization as Road Building Material. To obtain a new test method to determine whether or not a given decomposed granite soil can be utilized for road building. M. Mizobuchi. HRIS 35. (Citations) ACTIVE

80. TECHNICAL LABORATORY, THE NIPPON ROAD COMPANY, LTD. (Nippon Doro Kabuskiki Kaisha, Gijustsu Kenkyujo): 11-20 Tamagawa 2-chome, Ota-ku, Tokyo 144

(4) Effects of Coated Chippings on the Characteristics of Asphalt Pavements. Study of the effect of such chippings on resistance to rutting, wear and fatigue, and preservation of anti-skid resistance. H. Yamashita, T. Tanaka, Y. Ogawa. HRIS 24. ACTIVE

81. OHBAYASHI-GUMI TECHNICAL RESEARCH INSTITUTE: 640-4-chome, Shimokiyoto, Kiyose-shi, Tokyo

(1) Behavior of Lime-or Cement-Stabilized Soil under Dynamic Loading. Dynamic triaxial compression tests on non-stabilized and stabilized soils to clarify the properties under dynamic loading. J. Saito, K. Hirama. HRIS 62. ACTIVE

(2) Thioxtropic Strength Increase. A study of the effect of temperature on the rate of thioxtropic strength increase using field tests during summer and winter temperatures. J. Saito, K. Kimura, K. Hirama, K. Tsuchiya. HRIS 62. ACTIVE

(4) Improvement of Soft Foundation of Organic Soils. To establish a manual for design and construction of earthworks on soft ground of organic soils or peat. K. Hirama, M. Maruyama. HRIS 62. (Citations) ACTIVE

82. ENGINEERING RESEARCH CENTER, HAZAMA-GUMI, LTD.: 1233 Yono, Yonoshi, Saitama-ken

(1) Excavation Methods of Tunnels Through Earth Ground with Insufficient Overburden. To minimize the adverse effects on the ground surface of tunneling in areas where the original ground must be reinforced or stabilized because of insufficient covering. K. Uematsu, H. Kobayashi. HRIS 63. COMPLETE

(2) Slope Stabilization by Earth Anchor. Study of various methods of positive stabilization of slopes by means of earth anchorages, piles, retaining walls. H. Furube, T. Kusunoki, T. Nakamura. HRIS 62. COMPLETE

(3) Speeding up of Tunnel by Means of Improved TBM Method. To improve the application of the tunnel boring machine method, so as to reduce time, personnel and costs of tunneling operations. Committee. HRIS 41. COMPLETE

(4) Reduction Method of Negative Friction Working on Piles. To reduce the negative friction on piles during driving, by studying properties of bitumens used for coating the piles. Y. Yamaguchi, M. Nakahara. HRIS 62 COMPLETE

(5) Mechanization of Excavation for Open Caissons. To develop a single piece of equipment that will excavate either circular or elliptical patterns so as to correspond to shape of caisson to be used. K. Matsugaki, T. Ebisu. HRIS 41. ACTIVE

(6) Construction of High Bridge Piers by Means of Slip Forms. To improve the adaptability of the slip form method to various types of structures. H. Nakauchi, T. Kita. HRIS 33. COMPLETE

(7) Treatment of Turbid Water such as Waste Slurry and Sludge due to Construction Activities. To improve a basic system developed earlier for chemical and mechanical treatment of waste slurry. T. Kato, Y. Mawatari. HRIS 33. COMPLETE

(8) Open Excavation of Soft Ground by Means of Sheathing. A study of the behavior of sheathing walls and the influences on the surrounding ground to establish design and construction methods to meet field conditions. K. Uematsu, T. Kesen. HRIS 33. COMPLETE

82. (9) Environmental Assessment in Planning Highway Tunnels. Study of ground water change due to tunnel excavation and its impact on environment. H. Kojo, T. Kitamura. HRIS 23. COMPLETE

(10) Earthquake-proof Design Programming for Submerged Unit Tunnels. Develop design program for all types of tunnels, including utility, water shield tunnels, etc. Staff. HRIS 21. ACTIVE

(11) Prediction and Coping Measures Against Environmental Troubles Due to Blasting During Construction. Establish assessment techniques of noise vibration, dust, and odors connected with blasting operations as they affect the environment. H. Kojo. HRIS 33. COMPLETE

(12) Study and Development on New Australian Tunneling Methods (NATM). Model and relevant field tests to verify the rationality of this new method. G. Michiyoshi S. Takenouchi, M. Higo, H. Yoichi. HRIS 33. COMPLETE

(13) Development of Centrifugal Concrete Spraying Unit for Primary Lining of Tunnel. To develop a centrifugal method of spraying concrete without the use of compressed air. T. Ebisu, O. Hatakeyama. HRIS 41. COMPLETE

(14) Study and Development of Methods of Improvement of Grounds by Means of Reaming Bits. A study of proposed ground improvement methods that would be applicable to all kinds of soils, including on types of bits, grout materials application equipment. K. Matsugaki, Y. Otani, H. Yamazaki M. Ono, T. Kato. HRIS 62. COMPLETE

(15) Development of Fibre Concrete. Research on the use of such material as steel, polypropylene and vinyl fibers on strength and performance of concrete, including mixing, placing and spraying of the mixtures. H. Nakaucho, T. Kita, K. Matsugaki T. Takenuchi. HRIS 32. COMPLETE

(17) Two-Dimensional Transient Analysis of Saturated-Unsaturated Seepage by Finite Element Method. A mathematical model for 2-dimensional hydrologic calculations accurate enough for engineering purposes has been developed and is being applied to simulate ground water seepage in tunnel construction; it is a finite element analysis model for treatment of seepage in nonhomogeneous, anisotropic, porous geological media. M. Kusabuka and others. HRIS 22. (Citations) COMPLETE

(18) Development of Self-Elevating Form Work. To investigate the use of self-elevating forms using jacks for large or high concrete structures substituting for special lifter now used. H. Nakauchi and other. HRIS 33. COMPLETE

(20) Joints of Cast In-situ Diaphragm Walls. To develop better joints between two adjacent concrete structures which are built at different times, but which should be one structure. A. Sasahara, S. Takakura T. Wakui. HRIS 25. COMPLETE

(21) Development of a Removable Ground Anchor. To investigate the pull-out resistance of ground anchors, and develop mechanism for both removing and constructing the removable ground anchor. T. Kusunoki. HRIS 33. COMPLETE

(22) Study on Shotcreting Materials. An investigation of high early strength materials, minimization of thickness of lining, and improvement of workability of shotcrete in narrow spaces. K. Matsugaki. HRIS 34. ACTIVE

(23) Investigation of Applicability of Shield Tunneling Machines. Study of various machine characteristics, ground conditions, environmental conditions and charts to use in selecting most appropriate type machine. K. Uematsu. HRIS 41. ACTIVE

New Projects

82. (24) A Study on the Dynamic Behavior of the Structures Constructed in Ground. Use of forced vibration tests, vibration tests using the shaking table, and the analysis using the F.E.M. to study the method of aseismic design for structures built under ground. Y. Yamaguchi, M. Tsuzita, K. Wakita. HRIS 25. ACTIVE

(25) A Study on Reinforced Concrete Structure in Acidic Ground Water. To prevent corrosion of concrete structures by acidic ground water through study of corroded materials and development of corrosion resistant paint. T. Kita, T. Takeuchi. HRIS 25. ACTIVE

(26) A Study on Rock-Bolting of the NATM. To determine through use of a model analysis reasons for ground movement during construction of tunnels when rock-bolting for ground support of the NATM. M. Gomi, S. Takenouchi, M. Higo, H. Yoichi. HRIS 63. ACTIVE

83. FUDO KENSETSU VHUO KENKYU-JO: 4-1-1 Higashi Oda, Ibaragi-shi, Osaka

(1) Model Experiment about the Horizontal Resistance of Piles in the Vertical Composite Ground. Use of model experiments to determine influence of specifications of sand compaction piles and original ground conditions on horizontal resistance of the pile. M. Iawasaki, M. Sawai. HRIS 62. ACTIVE

(2) Stabilization of Foundation by Deep-Mixing-Method. Experimental study of chemical stabilization of deep soft foundation in-situ with quick lime or cement milk. T. Tsugawa, M. Nakamura, H. Akuthu, S. Mathuzawa. HRIS 62. ACTIVE

(3) Utilization of Revolving Furnance Slag. A study of the removal of unstabilized lime from furnace slag so that it may be used in road construction. H. Kuwata, K. Tanimura, S. Iwamizu. HRIS 35. ACTIVE

(4) Stabilization of Road Bed by Consolider System. The use of the Consolider plant and Fudo-Mix agents to consolidate weak clays and mud to provide footing for construction equipment and vehicles. M. Nakamura, T. Shibata. HRIS 62. ACTIVE

85. FUKUI UNIVERSITY: 3-9-1, Bunkyo, Fukui

(1) Effects of Partition of Communities by Roads. To find a method of assessing impact of new roads on communities at the planning stage. Y. Honda. HRIS 15. ACTIVE

(2) Swelling Characteristics of Mud Stone Slope in Road Cutting. Experimental study of the swelling of this stone after excavation. T. Irie, T. Muro. HRIS 64. (Citations) ACTIVE

(3) Pedestrian and Vehicular Traffic in Snowy Country. To develop an effective method of traffic control on streets in snowy countries by analyzing adverse effects of snow qualitatively as well as quantitatively. Y. Honda, N. Aoshima, M. Sasaki. HRIS 54. ACTIVE

(4) Wear Characteristics of Working Parts of Construction Machinery due to Road Construction Work. A study of the correlations between several kinds of metallic materials and the characteristics of soil and rock materials being excavated. T. Irie, T. Muro, H. Machihara. HRIS 41. (Citations) ACTIVE

(6) Weathering of Rock by Freezing and Thawing. Freeze-thaw tests on several kinds of work have shown that their properties decay in a linear relationship to the number of freeze-thaw cycles they have undergone. T. Irie, T. Muro, H. Machihara. HRIS 61. (Citations) ACTIVE

85. (7) Impact of Snow on Urban Transportation. To analyze factors influencing changed traffic flow in snow and develop traffic control systems appropriate to snow conditions. Y. Honda. N. Aoshima. M. Sasaki. HRIS 55. ACTIVE

New Project

(8) A Study on the Effects of Partition of Communities by Streets. To find a method of assessing impact of new streets on communities at the planning stage. Staff. HRIS 15. ACTIVE

86. DEPARTMENT OF CIVIL ENGINEERING. YAMAGUCHI UNIVERSITY Tokiwadai, Ube. Yamaguchi

(1) The Behavior of Pile Foundations During Earthquake. Clarify the behavior of pile foundations during earthquakes with consideration to ground deformation. S. Ohara. T. Yamamoto. HRIS 63. ACTIVE

(2) Behavior of Pile Foundations during Earthquakes. Theoretical study of pile response to earthquakes as well as model tests. S. Ohara. T. Yamamoto. HRIS 63. (Citations) ACTIVE

(3) Dynamic Shear Strength of Saturated Clay. To study dynamic shear strength characteristics of saturated clay to aid in structural seismic design. S. Ohara. N. Miura. T. Yamamoto. HRIS 63. (Citations) ACTIVE

(4) Traffic Bunch in No-passing Zone. Study of bunch size. mean bunch size. relationship between size and traffic volume and density. speed. etc. Y. Tamura. HRIS 55. (Citations) ACTIVE

87. NISHINIPPON INSTITUTE OF TECHNOLOGY Kanad-machi 1633. Miyako-gun. Fukuoka-ken

(1) Deformation Characteristics of Saturated Clays in Triaxial Consolidation Tests and Its Application to Settlement Analysis. K. Yasuhara. HRIS 62. (Citations) ACTIVE

(2) Deformation Characteristics of Saturated Clays Subjected to Repeated Loadings. K. Yasuhara. K. Hirao. HRIS 62. (Citations) ACTIVE

89. THE INSTITUTE OF BEHAVIORAL SCIENCES 1-35-7. Yoyogi. Shibuya-ku Tokyo

(6) The Toll System of the Tokyo Metropolitan Expressways. To study the Tokyo Metropolitan Expressway toll system. including the present uniform rate system. Y. Higano. HRIS 13. ACTIVE

(7) Freight Transportation in Large City/Survey of the Impact of Truck and Other New Transportation Systems to the Region. In connection with proposed new freight transport system to substitute for motor trucks, to analyze demand for physical distribution as related to road traffic, to study environmental aspects of distribution system. and to study impact of motor truck on the community. E. Kamijo. Y. Takenchi. HRIS 13. ACTIVE

90. TAISEA CORPORATION 1-4-28. Mita. Minato-ku. Tokyo 108

(1) Rational Design of Sheating. Establishment of rational design for sheeting used against soil failure. based on field measurements and evaluation of construction records. M. Sakaguchi. H. Izumi. K. Kamemura. HRIS 62. COMPLETE

(2) Thermal Stress of Massive Reinforced Concrete. Variations in mix designs to prevent thermal cracking. considering thermal characteristics of concrete, effect of additives. H. Tazama. Y. Matsuoka. HRIS 32. ACTIVE

90. (3) Electrochemical Prevention of Landslides. Investigation of an electrochemical method of drainage to consider types of landslides for which the method is effective and evaluate conditions. K. Nakao. S. Iiboshi. M. Aoto. HRIS 62. COMPLETE

(4) Design Method for Large Diameter Tunnel. Finite element analysis to establish tunnel design considering plasticity and viscoelasticity and failure criteria of rock. K. Nakao. H. Aoto. S. Iiboshi. K. Ruoke. HRIS 63. ACTIVE

New Projects

91. SHIMIZU CONSTRUCTION COMPANY. LTD.. RESEARCH LABORATORY 4-17 3-chome Koto-ku. Tokyo 135

(2) Deflection Behavior for Creep in Prestressed Concrete Bridges. To note that application of average creep factor method to creep in prestressed concrete bridges is not always correct and to suggest other methods. T. Okada S. Kobayashi. HRIS 25. (Citations) ACTIVE

(3) Design of Stress Concentration Zone in Prestressed Concrete Member. A Theoretical (Nonlinear Analysis by Finite Element Method) and experimental study of design stress concentration zone in prestressed concrete member. T. Okada. T. Shioya. HRIS 25. ACTIVE

(4) Fatigue Failure Mechanism of Concrete Members. To clarify experimentally the fatigue characteristics of reinforced concrete members under pulsating loads with special attention to the load amplitude and load frequencies, and failure mechanism. Y. Nagasawa. HRIS 25. ACTIVE

New Project

92. TOBISHIMA CONSTRUCTION CO., LTD., TECHNICAL INSTITUTE: 5472 Kimagase Sekiyado-cho. Chiba

(2) Grouting Mortar for the Half Rigid Pavement. To develop a grouting mortar for half-rigid pavement which has sufficient strength to allow the road to be opened to traffic as early as possible. M. Onozawa. M. Sugiuchi. H. Yokomizo. HRIS 24. ACTIVE

93. TECHNOLOGY CENTER FOR NATIONAL LAND DEVELOPMENT 8-10 Toranomon 2 chome. Minato-ku. Tokyo

(2) Unplasticized Polyvinyl Chloride Pipes Buried Under Roadway. Study of technical problems of this pipe subjected to traffic load and impact. HRIS 34. ACTIVE

New Project

(3) A Study of Planning System for Traffic Control and Road Network in Regional Area. A project to provide administrators with reference materials for strengthening local indusries and smoothing lives of residents in localities when planning transportaion systems. T. Sakai. HRIS 11. ACTIVE

96. TECHNICAL RESEARCH LABORATORY OF AOKI CONSTRUCTION COMPANY LTD.: No. 5-5. Shibuya 3-chome. Shibuya-ku. Tokyo

(1) Method of Boring Hard Soil for Installation of Paper Drain by Light Weight Drain Paper Driving Machine. Consider use of water-jet method. N. Jin-nai. HRIS 33. COMPLETE

97. CHUO FUKKEN CONSULTANTS COMPANY, LTD.: 5-26 Higashimikuni 3-chome Yodogawa-ku, Osaka

(1) Automatic Design of the Road Alignment with Electronic Computer. To develop a more efficient computer for precise design work. Y. Fujimura J. Hagimori. HRIS 21. ACTIVE

100. DEPARTMENT OF CIVIL ENGINEERING, YAMANASHI UNIVERSITY Takeda 4 Kofu

(1) Studies on Mechanical Behaviors of Rock-Like Ground (Particularly Stress Concentrations and Fractures). Study of the factors influencing the stability of rocky ground, such as overburden load, slope of ground surface and shapes as well as strength, deformation and fissures of the rock masses. K. Hirashima. HRIS 63. (Citations) ACTIVE

(2) Plane Strain Consolidation of a Clay Layer. To study 2-dimensional consolidation of a clay layer of finite thickness, using Biot's theory as a basis for analysis, and validating by model tests. Y. Murakami. HRIS 62. (Citations) ACTIVE

101. DEPARTMENT OF CIVIL ENGINEERING, UNIVERSITY OF RYUKYUS 3-chome, Tonokura-cho, Naha

(1) Study of Durability and Deterioration of Reinforced Concrete in Semi-Tropical Area. Study of corrosion of reinforcement in concrete, the effect of salt on the reinforcement, effect of corrosion inhibitors, water/cement ratio and durability, and geological and structural distribution of cracks and deterioration, of reinforced concrete structures. Y. Gushi. HRIS 32. (Citations) ACTIVE

102. DEPARTMENT OF CIVIL ENGINEERING, MEIJYO UNIVERSITY 69-49, Yagotourayama Tenpaku-Cho, Tenpaku-Ku, Nagoya City

(1) Research and Analysis of the Rutting in the Express Highway. To clarify the cause of rutting in the surface of the expressway lanes. I. Hoshino A. Fujita. HRIS 24. FUTURE

(2) Research of Bicycle Road Planning and Parking Space in the City. To incorporate the bicycle traffic system into the overall traffic planning, considering human factors, geometrics of bicycle roads. H. Takahashi. HRIS 12. (Citations) ACTIVE

(3) Route Selection in Bicycle Road Network. To develop a route selection model which will reflect the various elements, such as character of bicyclist, geometric design, safety, etc. as related to bicycle road planning. S. Watanabe M. Takahashi. HRIS 21. (Citations) ACTIVE

(4) Rutting of Bituminous Mixtures. To develop a design method of stable mixtures that will not rut under heavy traffic. A. Fujita. HRIS 24. ACTIVE

(5) Dead Angle of Motor Vehicle and Bicycle. To determine the stopping positions of motor vehicles and bicycles at intersections in order to prevent fatal accidents by left-turning trucks with bicycles due to dead angles of sight from the trucks. M. Takahashi. HRIS 53. (Citations) ACTIVE

(6) Analysis of Traffic Flow Using the Radio-Controlled Helicopter. To develop a method of traffic flow phenomena analysis in the intersection and non-intersection with the TV camera loaded on a radio-controlled helicopter. S. Watanabe, M. Takahashi. HRIS 55. ACTIVE

103. DEPARTMENT OF TECHNOLOGY, TOHOKU INSTITUTE OF TECHNOLOGY 19 Koeji, Nagamachi, Sendai

(1) Volume Changes of Snowdrifts According to Types of Medians. Model wind tunnel tests of the different phenomena of snowdrifts according to type of median and local peculiarities. M. Moishi, K. Hanabuchi, K. Kikuchi. HRIS 40. (Citations) ACTIVE

(3) Slope Protection Vegetating Plates Made of Industrial Waste. To study the application of vegetating plates for the grass protecting slopes of roads. H. Takahashi, T. Konno, Y. Hotta. HRIS 23. (Citations) ACTIVE

(4) Soil Stabilization Made of Solids of Granulated Materials. To study the expansibility of granulated solids to decrease surface settlement and improve bearing capacity of embankments. H. Takahashi, T. Ito, T. Konno. HRIS 62. ACTIVE

104. GIFU TECHNICAL COLLEGE: Shinsei-cho, Gifu Prefecture

(1) Characteristics of Commuters Modal Choice between Private Cars and Public Modes. Quantitative analysis of data from two large housing areas and determine relation between choice rate and time ratio. C. Watanabe. HRIS 12. (Citations) ACTIVE

(2) Characteristics of Bicycle Work Trips Concentrating on the Station. An analysis of the choice commuters make on the mode of access to the station. C. Watanabe. HRIS 55. (Citations) COMPLETE

New Project

(3) Forming-Mechanism of Bus Service-Areas. To analyze the questionnaire survey technique of establishing bus service areas and to consider the relationship between the bus stop location and bus demand. C. Watana. HRIS 54 (Citations) ACTIVE

105. JAPAN TUNNELLING ASSOCIATION: 2-14-7 Shinto-cho, Chuo-ku, Tokyo

(1) Design and Tunneling Method of Twin Tunnels in Shallow Soft Ground. To find appropriate method for tunnelling twin tubes at the same time and by stage construction in shallow soft ground and study effects of tunnel excavation on adjacent structures. HRIS 22. (Citations) ACTIVE

New Projects

(2) Water Sealing. Collecting data on water sealing practices and compiling a guide for use by those concerned with water sealing in tunnelling. T. Tateishi and Committee. HRIS 22. ACTIVE

(3) Effect of Ground Water in Tunnelling. To develop a method of estimating water leakage during tunnel excavation as well as the zone affected by the water by hydrological, hyrographical and geological considerations. H. Takahashi. HRIS 22. ACTIVE

(4) NATM Process Applied to Swelling Ground. To theoretically analyse NATM support system for heavy swelling ground, collect practical examples and compile guide lines for NATM. T. Matsumoto. HRIS 25. COMPLETE

(5) Design and Construction of Ventilation Shafts. Discussion of three kinds of design for ventilation shafts in relation to their economics, efficiency and safety. K. Mitani. HRIS 25. COMPLETE

105. (6) Deformation of Tunnel Lining. Research and discussion of the causes of deformation and deterioration of the lining in existing tunnels to devise appropriate repairs. N. Sato. HRIS 25. ACTIVE

(7) Application of S.F.R.C. in Tunnel Construction. To review the effectiveness and economy of the application of steel fiber reinforced concrete in tunnel lining. S. Ibukiyama. HRIS 32 (Citations) COMPLETE

(8) Repairing Method with NATM. To study the application of NATM for repairing existing tunnels by collecting case histories. M. Yamamoto. HRIS 40. ACTIVE

(9) Gas Explosion in Tunnel Works. To compile guide lines for prevention of explosions in tunnel works. Y. Nakai. HRIS 51. (Citations) COMPLETE

(10) Rock Bolt Support in Practice Use. To test various rock bolts for efficiency, and evaluate their bearing capacity, applicability and economics. M. Yamamoto. HRIS 63. (Citations) COMPLETE

(11) Ground Surface Settlement. To collect case histories of ground settlement due to tunnelling and discuss preventive measures. K. Kanayasu. HRIS 63. COMPLETE

106. TODA CONSTRUCTION CO., LTD., ENGINEERING RESEARCH LABORATORY 209 Kamihongo, Matsudo City, Chiba

(1) TS Joint Method. Testing of this type of joint in prefabricated steel reinforcing bars formed by machinery. HRIS 25. (Citations) ACTIVE

(2) Characteristics of Peat Grounds and Improving Method. To determine the characteristics of peat ground and develop methods of improving its supporting capabilities. M. Hirono. HRIS 62. ACTIVE

(4) Measurement Method of Cement Quantities in Concrete Mortar by Radiation. Study of the method of measuring cement quantities in mortar or concrete by using americium and measuring the compton scattering. HRIS 32. ACTIVE

New Projects

(5) Loading Test of Bracket in RC Elevated Bridge Construction. An analytical study on the behavior of the anchor bolt based on tests of the behavior and joint strength of the bracket joint. H. Hikage, S. Kumagai, M. Okamura. HRIS 25. (Citations) COMPLETE

(6) The Study of Wood Chip Concrete Reinforced With Steel Fiber. An investigation of the use of wood chip concrete reinforced with steel fiber to increase impact resistance and abrasion resistance of concrete. Engineering Research Laboratory, Toda Construction Co., Ltd. HRIS 32. (Citations) ACTIVE

107. TECHNICAL RESEARCH LABORATORY, NICHIREKI CHEMICAL INDUSTRY COMPANY, LTD.: 272 Shiba, Kokubunji-mechi, Tochigi-ken

(1) Method for Levelling Deformations of Pavement and its Materials. Develop a method for levelling irregularities of road surfaces and sealing cracks without inconvenience to traffic; develop materials that can be cured in a short time. Mechita, Kanazawa, Tamaoki, Yasuoka, Hosoi. HRIS 40. ACTIVE

109. NATIONAL RESEARCH CENTER FOR DISASTER PREVENTION Ten-nodai, 3-Chome, Sakura-Mura, Niihari-Gun, Ibaraki, 300-32

(1) Measurement of Strong Ground Motion. To accumulate records of strong ground motion so as to use them in developing earthquake resistant designs for structures. K. Ohtani, S. Kinoshita. HRIS 63. ACTIVE

110. JAPAN CONSTRUCTION MECHANIZATION ASSOCIATION, Kikai Shinko Building, 5-8 3-chome, Shiba Park, Minato-ku, Tokyo

(1) Development of Less-Noisy Earthmoving Machinery. Research and development to reduce sound levels of bulldozers and hydraulic excavators by 15 to 20 dBA. Technical Development Committee, Technical Division for Reducing Noise and Vibration. HRIS 41. ACTIVE

(2) Development of Construction Methods and Equipment With Less Noise and Vibration. To develop construction methods and equipment with less noise and vibration than conventional types; this project includes trial manufacture and test as well as work trials. Technical Development Committee, Technical Division for Reducing Noise and Vibration. HRIS 41. ACTIVE

111. NOMURA RESEARCH INSTITUTE, 1600 Kajiwara, Kamakura City Kanagawa Prefecture 247

(5) Comprehensive Transportation System in Kobe City. This study of Kobe's transportation system used questionnaires and analysis of passenger use to evaluate the existing system, and proposed a new route. K. Saito and others. HRIS 13. ACTIVE

113. MAEDA CONSTRUCTION COMPANY, LTD., TECHNICAL RESEARCH INSTITUTE: 1-39-16, Asahi-cho, Nerima-ku, Tokyo

(2) Shrinkage Crack Control Using Expansive Cement. To determine methods and design practices for reducing cracking with expansive cements. C. Nakayama. HRIS 32. COMPLETE

(3) Ground Surface Settlement Due to Shield Driving. To determine the behavior and analyze the ground displacement due to tunnelling. T. Doi, M. Ito, F. Hirano, K. Sugiura, M. Shirasawa. HRIS 63. (Citations) ACTIVE

(4) Theoretical Study of Consolidation Drainage Rate. A study of the effectiveness of drains such as sand mat or sand piles on the consolidation of fills. T. Kawarai. HRIS 63. (Citations) COMPLETE

New Project

(5) Theoretical Study on the Consolidation of Elastic Body and Mechanism of that of Soil Deposits. To demonstrate that general correlative coefficient between surplus pore water pressure and volumetric strain was modulus of elasticity of volume. T. Kawarai. HRIS 63. (Citations) COMPLETE

114. INSTITUTE OF CONSTRUCTION TECHNOLOGY (Kumagai-Gumi Gijutukenkyusho) 17-1, Tukudo-cho, Shinjuku-ku, Tokyo

(1) Study of a New Austrian Tunneling Method. To study the applicability to construction in poor or swelling rock strata of a new Austrian tunneling concept which attempts to use the rock mass itself for effective support; the appropriateness of the method to specific situations is to be evaluated from in-situ measurements and numerical analysis. T. Yokota and others. HRIS 33. ACTIVE

(2) Mobile Vibration Measuring and Analyzing Equipment. To measure and analyze structural vibration and reaction to seismic impulses, a vehicle-borne sensing and analyzing system has been developed. S. Sadakane and others. HRIS 25. ACTIVE

(3) Stability of Tunnel Faces. To conduct 3-dimensional photoelastic studies of stability of tunnel faces. T. Mineya and others. HRIS 63. ACTIVE

115. TECHNICAL LABORATORY, TAISEI DORO CO., LTD., 264 Osaki, Urawa-City, Saitama 104

(1) Research on Utilization of Waste Pavement Materials. To study ways to improve productivity of systèm which recycles waste paving materials through preheating of imput, improvement of mixing process, etc. S. Mino. HRIS 33. ACTIVE

(2) Research on Improvement of Durability of Bituminous Pavement. To study improvement of rheological properties of bituminous pavement by addition of thermoplastic materials. S. Mino. HRIS 31. ACTIVE

(3) Improvement of Durability of Asphalt Pavement. To determine the most suitable thermoplastic resins for improving flow properties of in-service asphalt pavements. Y. Araki, T. Kozai. HRIS 31. ACTIVE

116. TECHNICAL DEVELOPMENT HQS., AOKI CONSTRUCTION COMPANY, LTD.: 17-3 Shibuya, 2-chome, Shibuya-ku, Tokyo

(1) Method of Forecasting Particular Value of Compaction by Proctor Density Test. To apply the quality control method to embankment construction. HRIS 62. (Citations) COMPLETE

117. DEPARTMENT OF CIVIL ENGINEERING, KANSAI UNIVERSITY: Senriyama Suita Osaka

(1) Lime Stabilization of Highly Plastic Clays. To find the effects of compaction and stabilization with quicklime on highly plastic clay. K. Nishida C. Aoyama. HRIS 62. (Citations) ACTIVE

118. TECHNICAL RESEARCH LABORATORY, NICHIREKI CHEMICAL INDUSTRY COMPANY LTD.: 272 Shiba, Kokubunji-machi, Shimotsuga-gun Tochigi-ken

(1) Waterproofing Materials for Bridge Decks and Methods of Their Application. Study of the use of waterproofing by prefabricated sheets, as well as methods and materials for placement that can smoothly release water vapor when produced. M. Endoh, K. Sasaki. HRIS 34. COMPLETE

119. TECHNICAL RESEARCH INSTITUTE: 5-8, 3 chome, Hamaguchi-Nishi, Suminoe-ku, Osaka 559

(1) Study on Quicklime Piles. Study of the process of decreasing moisture content of soils by using these piles, distribution of moisture after treatment and foundation design after treatment. K. Arimoto, S. Kusakabe. HRIS 63. (Citations) ACTIVE

New Project

(2) Base Stabilization with Cement Modified Asphalt Emulsion. To collect and add to existing data on mix design methods of cement modified asphalt emulsion for base stabilization. M. Meshita, H. Tamaoki, H. Suzuki K. Igarashi. HRIS 24. (Citations) ACTIVE

120. SHIZUOKA PREFECTURAL GOVERNMENT, CIVIL ENGINEERING DEPARTMENT, ROAD MAINTENANCE SECTION: Oite-machi 9-6, Shizuoka-shi 420

(1) Applicability of Base Stabilization with Emulsified Asphalt and Cement. To determine the quality of base stabilization with asphalt and cement using low-quality and marginal aggregates in the interest of resources and labor savings. H. Uchida. HRIS 24. (Citations) ACTIVE

121. CONSTRUCTION BUREAU OF TOKYO, METROPOLITAN GOVERNMENT

(1) Vibration Prevention Effects of Pavement Structures. To reduce pavement vibration effects by using cement-stabilized sand in subgrade soil. Staff-Construction Bureau. HRIS 24. ACTIVE

122. KITAMI INSTITUTE OF TECHNOLOGY, DEPARTMENT OF DEVELOPMENT ENGINEERING
Koencho 165, Kitami-city, Hokkaido

(1) A Study on the Generation and Propagation of Infrasound from Steel Box Structure due to a Traveling Load. An analysis of the power level of infrasound vibration in steel and reinforced concrete structures. T. Ohshima. HRIS 25. (Citations) COMPLETE

(2) A Study of Infrasound Vibration Generated from Steel Box Structure by Traveling Load. A determination that the theoretical calculation of infrasound vibration by means of dynamic folded plate analysis coincides with actual behavior of bridges. T. Ohshima. HRIS 25. (Citations) COMPLETE

123. RYOKKA HOZEN KYOKAI: 1-27-2, Chiyoda-ku, Tokyo

(1) A Natural Environment Study for the Section of Kyushu Expressway Between Yashiro and Ebino. An environmental impact study of a new stretch of expressway through areas of natural beauty and good environment in Kyushu. S. Nitta. HRIS 17. COMPLETE

124. MITSUI CONSTRUCTION CO., LTD.: 10-1, 3 Chome, Iwamoto-cho, Tokyo.

(1) The Use of Computer for Road Design - Route Planning System. The creation of a Route Planning System using a computer and its peripheral graphic processing equipment. T. Umezono, Y. Nakagawa, M. Itami. HRIS 21. (Citations) COMPLETE

125. KUMAGAI-GUMI GIZYUTU KENKYUSHO: 17, Tukudo-cho, Shinjuku-ku, Tokyo

(1) New System of Tunneling Art. An exploration of tunnel design and construction leading to a safer and more economical method using computer numerical analysis of rock mass displacement and stresses. T. Yokota, M. Ueno Y. Mitarashi, K. Ishigaki, T. Koori. HRIS 25. ACTIVE

(2) Development of Bell Shaped Pile in Bottom by Reverse Circulation Drilling. To increase bearing power of pile by enlarging diameter of its bottom to form bell shape. R. Hirai, O. Osaki, N. Hisinuma, M. Isogai, N. Watanabe. HRIS 25. (Citations) COMPLETE

(3) Development of Noise and Vibration-Free Pile Driving Method. A description of a noise and vibration -free pile driving method using an earth auger feeding slurry water and a hollow pile driven by drop hammer operated inside of it. S. Masuzawa, R. Hirai, K. Tamura, O. Osaki, N. Hisinuma. HRIS 33. ACTIVE

126. HITACHI SHIP BUILDING AND ENGINEERING CO., LTD., TECHNICAL RESEARCH INSTITUTE, MANUFACTURING TECHNOLOGY CENTER, WELDING AND PAINTING RESEARCH LABORATORY:

(1) Investigation on Weldability of Reinforcing and Repair Welding of Steel Girders in Service. To standardize reinforcing and repair welding of bridge girders under unfavorable conditions while the bridge is in service. A. Nagai, M. Osawa, T. Yagi. HRIS 40. ACTIVE

127. TRAFFIC CONTROL COMMITTEE FOR THE HANSHIN EXPRESSWAY:

(1) Traffic Control Strategies for the Hanshin Expressway Network. An investigation of various traffic control strategies to minimize congestion and maximize utilization of the urban expressway network, such as ramp closure, ramp metering mainline metering, etc. E. Kometani, T. Sasaki. HRIS 54. ACTIVE

KENYA

Supplementary Survey - 1980

The 1980 survey of Kenya was conducted by the Planning Section of the Ministry of Transport and Communication and lists nine projects not previously reported, of which three are shown to be complete.

1. MINISTRY OF TRANSPORT & COMMUNICATIONS, DEPARTMENT OF ROADS: Ngong Road, P. O. Box 52692, Nairobi

a. Materials Testing Laboratory: P. O. Box 11873, Nairobi

(18) Investigation of the Behavior of the Overlay Materials. Staff. HRIS 35. ACTIVE

(19) A Computer Programme for Calculating the Stresses and Strains Developed in the Different Layers of a Multi-Layer Elastic System. Staff. HRIS 24. ACTIVE

b. Development and Planning Branch: Same address.

(58) The Economic Feasibility Study of Improving Nakuru-Timboroa Road (Some 81km). East African Engineering Consultants. HRIS 13. COMPLETE

c. Special Projects Branch: Same address.

(2) Impact Study on Rural Access Roads. A. Kudat. HRIS 15. ACTIVE

2. UNIVERSITY OF NAIROBI, DEPARTMENT OF CIVIL ENGINEERING Nairobi

(15) Structural Behaviour of Flexible Pavements Under Tropical Climate. An investigation into pavement behaviour under repeated traffic loading. R. Jones, F. Gichaga, R. Smith, J. Lovegrove. HRIS 24. COMPLETE

(16) Corrugation Formations in Earth Roads. Investigations of causes and ways of eliminating corrugations in earth roads. R. Smith, J. Stoddart, R. Carson, F. Gichaga. HRIS 24. ACTIVE

(17) Use and Behaviour of Asphalt Concrete Surfacings over Unbound Bases in Kenya. Behaviour for purpose of modifying current design technique. G. Hall, R. Smith, F. Gichaga. HRIS 31. COMPLETE

7. H. P. GAUFF CONSULTING ENGINEERS: P.O. Box 49817, Nairobi

(4) Sagana - Marua Overlay Design. Investigation into pavement behaviour and design of strengthening measures of failed or inadequate sections. Staff. HRIS 24. ACTIVE

(5) Approach Roads to New Nyali Bridge - Mombasa. Review of present traffic flow situation in Mombasa and improvement of traffic arteries to cope with re-routed traffic after opening of New Nyali bridge. Staff. HRIS 55. ACTIVE

KUWAIT

Supplementary Survey - 1980

Mohamed Al-Sanie

The 1980 survey of Kuwait was reported by Mr. Mohamed Al-Sanie, Chief Engineer, Department of Roads and Drainage, Ministry of Public Works. Nine new projects, all still active, are listed.

1. MINISTRY OF PUBLIC WORKS, ROADS AND DRAINAGE DEPARTMENT: P.O. Box No. 8 Kuwait City

b. Road Research Center: Same address

(29) Specifications for Open Friction Courses. Evaluation of factors critical in the mix design of open friction courses with reference to local climatic and loading conditions. Al-Hamdani, H.R. Guirguis. HRIS 24. ACTIVE

(30) Bridge Inventory Program. Computerized program for recording physical data and condition of bridges in Kuwait. J. Rose, T. John, M. Sultani, H.R. Guirguis. HRIS 25. ACTIVE

(31) Bridge Inspection Program. A program to develop bridge inspection techniques and criteria and develop future maintenance requirements. J. Rose, T. John, H.R. Guirguis. HRIS 25. ACTIVE

(32) Rheology of Bitumen/Filler Systems. Investigation of hydrated and unhydrated cement, hydrated lime, sulphur and limestone dust on the relative values and temperature susceptibilities of bitumen filler systems. S. El-Etr, H.R. Guirguis. HRIS 31. ACTIVE

(33) Revision of Specifications and Preparation of Construction Manual. Review existing specifications for road construction and prepare a construction manual. W. Gibboney, H.R. Guirguis. HRIS 33. FUTURE

(34) Laboratory Compaction of Subgrade Soil. Assessment of different compaction techniques of subgrade soil to derive specifications consistent with optimum compaction attainable on site. S. Doshi, H.R. Guirguis. HRIS 62. ACTIVE

(35) An Analysis of Subgrade Reaction Under Dynaflect Testing. Investigation of stress/strain profiles within a given subgrade subjected to dynoflect loading. H. R. Guirguis, G. Baker, W. Gibboney. HRIS 62. ACTIVE

5. KUWAIT UNIVERSITY, DEPT. OF CIVIL ENGINEERING:

(1) Improvement of Bituminous Mix Properties Against Permanent Deformation. Study of the effect of filler type on mechanical properties of bituminous mixtures at high temperatures. A. Bissada. HRIS 31. ACTIVE

(2) Soil Stabilization. Investigation of properties of local subgrade soils when stabilized by either cement or lime. N.E. Ismaeel. HRIS 62. ACTIVE

MEXICO

Resurvey - 1980

Santiago Corro-Caballero

The 1980 resurvey of road research in Mexico, reported by Ing. Santiago Corro-Caballero of the Institute of Engineering, shows 169 projects, 75 of them being reported for the first time. Of the total, 95 are shown as completed.

1. AUTONOMOUS NATIONAL UNIVERSITY OF MEXICO (Universidad Nacional Autonoma de Mexico): Ciudad Universitaria, Mexico 20, D. F.

a. Engineering Institute: Same address

(102) Participation in a Drainage Seminar. A seminar sponsored by the Ministry of Public Works (SOP), with participation by Ministry staff as well as the Institute of Engineering. R. Dominguez M., J. A. Maza A., C. Cruickshank V., C. J. Gonzalez A. HRIS 22 ; COMPLETE

(116) Behavior of Rockfill Embankments. Comparison of an instrumented rockfill embandment behavior with predictions based on laboratory testing. W. Mendoza. HRIS 62. COMPLETE

(129) Needed Research on Low-Volume Roads (First Stage). To determine the needs for research on low-volume roads representative of Mexican conditions in the three main climatic zones of the country. S. Corro, E. Gonzalez, R. Magallanes, G. Prado, G. Negroe. HRIS 21. COMPLETE

(136) Evaluation of Findings of the Research in Pavements in Mexico (1972-1977). An evaluation of these findings for the Ministry of Human Settlements and Public Works. S. Corro-Caballero. HRIS 24. (Citations) COMPLETE

(137) Performance of Granular Bases with Different Percentages of Fines (Stage 3). Test track study of repeated full-scale loads of different models of 3-layered systems to determine influence of percentage and type of fines in the base on overall performance. S. Corro, G. Prado, M. Carrillo. HRIS 24. COMPLETE

(138) Development of the Laboratory of Pavements of the Institute Planning and design of a facility for testing fatigue of asphalt pavements to predict performance under field conditions. S. Corro, F. A. Rangel. HRIS 24. ACTIVE

(139) Participation in a Construction of Earthworks Seminar. To assist in the preparation of the seminar for the SAHOP. S. Corro, G. Prado. HRIS 33. ACTIVE

(140) Participation in a Pavement Seminar. To assist in the preparation of the seminar with the SAHOP. S. Corro, E. Gonzalez. HRIS 24. ACTIVE

(141) Constitutive Equations of Clays (Stage 3). To develop a model based on the Cambridge model for remolded clays, with an extension of the model to undisturbed clays. I. Herrera. HRIS 64. INACTIVE

(142) Cracking in Road Embankments. Investigation of possible effects of soil water fluctuation on cracking of embankments and tests of "asfaleno" as an inexpensive way to protect slopes against water content changes. M. Mendoza, J. Alberro. HRIS 64. COMPLETE

(143) Tests in Experimental Embankments. An extensive testing program of compacted soils, including in-situ shear, deformability and permeability measurements on an experimental embankment at Chicoasen Dam. R. J. Marsal, L. Montanez. HRIS 62. COMPLETE

1. a. (145) Dynamic Soil-Structure Interaction of Structures Supported on Pile Foundations (Stage 2). To assess the influence of a friction pile on a viscoelastic soil on the dynamic properties and earthquake response of structures. J. Bielak, V. Palencia. HRIS 62. (Citations) COMPLETE

(146) Experimental Determination of the Characteristics of a Device to Limit Seismic Effects on Buildings. To develop structural features of a device designed to isolate structures from the seismic movements of the surrounding media. L. Esteva, E. Ovando-Shelle, O. Wieckmann. HRIS 63. COMPLETE

(148) Design of Concrete Walls with Low Height-Length Ratio. To obtain design and construction specifications for concrete walls that take into account ductility, distress and energy absorption. O. Hernandez, R. Meli. HRIS 25. COMPLETE

(149) Behavior of Large Sand Samples Subjected to Seismic Excitations. To develop analytical as well as experimental tools to know the pore history in various points of a sand sample under simple shear conditions. A. Diaz, E. Rodriguez, E. Ovando. HRIS 63. COMPLETE

(151) Method of Characteristics in the Numerical Solution of Soil Amplification Problems. Solving the two-dimensional basic equations by the numerical method of characteristics. G. Ayala, A. Reyes. HRIS 63. INACTIVE

(152) Experimental Study on the Seismic Design of Embankments. An approximation of the simplified methods proposed by Newmark and by Resendiz and Romo. G. Ayala, L. Esteva, M. Romo, Lopex, A. Diaz. HRIS 63. COMPLETE

(153) Seismic Design of Retaining Walls. To define the rational criteria for evaluating the pressures induced by earthquakes. G. Ayala, R. Aranda, M. Romo. HRIS 63. COMPLETE

(154) Channel Banks Resistance to Water Flow Action. Study of the rate of bank erosion as affected by bank resistance to shear stress produced by water flow in a channel section. C. Cruickshank, J. A. Maza. HRIS 22. COMPLETE

(155) Urban Hydrology. To determine relations between type of urbanization, the rainfall and the resulting run-off. R. Dominguez, V. Franco. HRIS 22. ACTIVE

(157) Mathematical Models for Flood Routing Through Rivers and Flood Plains. Development of three models to take into account effect of flood plains on river stages during floods. C. Cruickshank, E. Zumaya, M. Berozowsky. HRIS 22. (Citations) COMPLETE

(158) Soil Erosion by Rain. To develop a distributed mathematical model to simulate soil erosion in a watershed due to rain action. J. Gracie. HRIS 22. COMPLETE

(160) A Methodology for Rural Roads Planning. To plan rural roads as part of the general rural development process, with a local planning board using research and technical assistance; a project is now being implemented in Guerrero. V. Lara-Rosano and others. HRIS 12. COMPLETE

(161) Operational Analysis of Ground Transportation Network in the National Program for Urban Development. To provide utility elements so as to coordinate transportation with a territorial development project. E. Diaz-Mora. HRIS 12. COMPLETE

(162) Structural Design of Flexible Roads. To apply a systems approach to present structural design methods, including reliability concepts and new findings of the 1962-1978 experimental research program. S. Corro, R. Magallanes, G. Prado. HRIS 24. (Citations) COMPLETE

1. a. (163) Variation of Structural Response of Pavement Due to Thin Overlays. Evaluation, using Dynafleet and Benkelman beam measurement, of performance change due to placement of 2 different qualities of road mix overlays. G. Prado, S. Corro. HRIS 24. COMPLETE

(164) Performance of Flexible Roads with Thin Surface Courses in a Full-Scale Circular Test Track. To study performance - to-failure of 3-layer flexible pavements with different types and thicknesses of surface courses. S. Corro, G. Prado. HRIS 24. COMPLETE

(165) Evaluation of Typical Roads in Mexico. Study of 1-km sections of typical Mexican roads to relate structural design to deflection, maintenance, distress, and performance. G. Prado, S. Corro. HRIS 24. COMPLETE

(170) Preliminary Study on Using Industrial Gypsum for Soil Stabilization. To study clay, gypsum, and sand mixtures, including CBR and compression tests, for evaluation as soil stabilizers. F. A. Rangel. HRIS 34. COMPLETE

(172) Highway Quality of Service. To develop a mathematical model to predict quality of service of a 2-lane highway in terms of geometric characteristics and traffic. R. Magallanes, G. Negroe. HRIS 13. COMPLETE

(173) Demand Models for Ground Transportation Network. To develop an analysis tool for short-range decision-making to estimate interurban travel demand and traffic. E. Diaz-Mora. HRIS 13. COMPLETE

(174) Compacted Soils (2d Stage). To study compaction of 4 typical five Mexican soils, including design of a triaxial cell for repeated loads and preparation of state-of-the-art statements. J. Alberro and others. HRIS 62. (Citations) COMPLETE

(175) Behavior of Contaminated Rockfills for Roads. To study with instruments a rockfill contaminated with sand so as to establish a basis for revision of design criteria for such rockfills. M. Mendoza. HRIS 62. COMPLETE

(176) Processing and Interpretation of Accelerograms. To determine, using accelerograms obtained in 1976 and 1977, the parameters of Infiernillo Dam related to seismic events. J. Alonso and others. HRIS 63. COMPLETE

(177) Installation of a Strong-Motion Accelerograph Array in Baja California, Mexico (Stage 2). Construction, installation, and operation of accelerograph array for study of the San-Andreas fault system in Mexico. E. Mena-Sandoval and others. HRIS 63. COMPLETE

(179) Expansive Soils. To measure suction characteristics of expansive partly-saturated soils, and to develop an analytical model to study moisture migration within such soils. G. Miriart M. and others. HRIS 64. (Citations) COMPLETE

(180) Variation of Structural Response of Pavement Due to Thin Overlays. Study of the performance of thin road-mix overlays in three test roads in sub-tropical and steppe climates. G. Prado, S. Corro. HRIS 24. COMPLETE

(181) Fatigue Characteristics of Road Materials (First Stage). To characterize materials on a more fundamental basis in order to predict performance in actual service conditions and to develop recommendations for the adequate use of the findings in actual practice. S. Corro, G. Prado, M. Carrillo. HRIS 24. COMPLETE

1. a. (182) Evaluation of Typical Roads in Mexico (Second Stage). To relate structural design, maintenance and performance with systematic non-destructive tests in representative sections. G. Prado, S. Corro. HRIS 24. COMPLETE

(183) Highway Quality of Service (Second Stage). Based on a previously developed mathematical model, to predict the quality of service on typical roads in Mexico. R. Magallanes. HRIS 24. COMPLETE

(184) Behavior of Contaminated Rockfills for Roads (Second Stage). Studies of contaminated fills to establish a basis for revision of design criteria for such rockfills. M. Mendoza. HRIS 33. COMPLETE

(185) Location of Origin and Destination Sampling Sites in the Network for Studies During the 1980 Census. To design a strategy for data acqisition during these studies to be carried out at the same time as the 1980 National Census, in order to obtain data for programming of investments and planning of road transport from a socio-economic point of view. E. Diaz M., J. L. Montano. HRIS 55. COMPLETE

(187) Compacted Soils (Third Stage). To establish empirical relationships on the behavior of expansive soils, partially saturated, under various conditions of loading and water content. M. P. Romo. HRIS 62. COMPLETE

(188) Dynamic Behavior of Sands (First Stage). To modify direct shear apparatus to apply cyclic loading in one direction only, obtain best technique for sand-fines specimens; develop techniques to determine void ratios, and studies under dynamic loading. J. L. Leon, J. L. Thes. HRIS 62. COMPLETE

(189) Plane-strain Testing on Undisturbed and on Recompacted Samples of Clays from the Impervious Core of Chicaosen Dam. To determine stress-strain characteristics of such samples, with plane-strain equipment designed and constructed at the Institute which will be evaluated. R. J. Marsal, A. Fuentes, R. Esquivel. HRIS 62. COMPLETE

(190) Dynamic Testing of Embankments. The testing of model embankments with various slopes on the shaking table, measuring the distortion after each application of a harmonic vibration of given acceleration and frequency. J. L. Leon, R. Resendiz, E. Ovando, E. Rodriguez, O. Weckman. HRIS 62. (Citations) COMPLETE

New Projects

(191) Structural Design of Flexible Roads. To apply a systems approach to present structural design methods, including rational load damage factors, reliability concepts and new findings of the 1962-1980 experimental research program. S. Corro, R. Magallanes, G. Prado. HRIS 24. (Citations) COMPLETE

(192) Heavy Duty Rigid Pavements for Airfields on Highly Compressible Clay Foundations (First Stage). To study alternatives for the design of heavy-duty rigid airfield pavements on deep and highly compressible clay foundations. S. Corro, G. Prado, R. Magallanes, M. Carrillo. HRIS 24. ACTIVE

(193) Fatigue Characteristics of Road Materials (Second Stage). To predict performance in actual service conditions of various types of bituminous surface courses. S. Corro. HRIS 31. ACTIVE

(194) Structural Layer Equivalence Factors for Road Pavements (First Stage). To develop design recommendations related to the use of structural layer equivalence factors for various types of road materials. S. Corro. HRIS 24. ACTIVE

1. a. (195) Guidelines for the Structural Design of Pavements in Streets of Industrial Developments. To develop guidelines for the structural design of pavements with load damage factors calculated according to the method developed at the Institute of Engineering. S. Corro. HRIS 24. (Citations) COMPLETE

(196) Development of the Laboratory of Pavements of the Institute. To plan and design a facility for testing fatigue of asphalt pavements which will predict performance under field conditions. S. Corro, F. Rangel. HRIS 31. ACTIVE

(197) Participation in a Construction of Earthworks Seminar. To collaborate in a Construction of Earthworks Seminar sponsored by the Ministry of Human Settlements and Public Works, with participation of the Ministry Staff as well as the Institute of Engineering. S. Corro, G. Prado. HRIS 33. ACTIVE

(198) Participation in a Pavement Seminar. To collaborate in a Pavement Seminar sponsored by the Ministry of Human Settlements and Public Works, with participation of the Ministry Staff as well as the Institute of Engineering. S. Corro. HRIS 24. ACTIVE

(199) General Recommendations on the Geometric Design of Streets in Industrial Developments. To present recommendations for the geometric design of streets in industrial developments. R. Magallanes. HRIS 21. (Citations) COMPLETE

(200) Verification of the Capacity of Two-Lane Roads through Simulation. To critically compare the capacity of two lane roads obtained by traditional procedures with those obtained using simulation. R. Magallanes. HRIS 24. ACTIVE

(201) Normative Prospective on the Geometric Characteristics of the Highway. To study the effects of the increment in traffic demand and traffic volume in order to establish normative requirements related to the geometric characteristics of the highway. R. Magallanes. HRIS 24. ACTIVE

(202) Comparative Study of Freight Transportation by Railroad and Highway. To examine relations, differences and similarities among rail and highway in the achievement of freight transportation within the country. J. Montaño-Angeles. HRIS 12. ACTIVE

(203) Methodology to Elaborate the 1980 Origin-Destination Matrix. To elaborate a systematic, coherent and efficient procedure for the estimation of origin-destination load and passenger road matrices, including the calculation of measurements of their uncertainty. E. Diaz-Mora. HRIS 12. ACTIVE

(204) Development of Demand Models for Railroad Transport (First Stage). To develop demand models for railroad freight transportation, evaluating their applicability for transportation planning and convenience to be included, as independent models, in a multimodal one. E. Diaz-Mora. HRIS 12. ACTIVE

(205) Dynamic Analysis of Structures Resting on Piles. To study the dynamic response of structures resting on a pile group with a combination of a horizontal force and an overturning moment acting in the pile cap. G. Aranda. HRIS 25. ACTIVE

1. a. (206) Seismic Analysis and Design of Earth Retaining Structures with Limited Replacements. To develop a simplified backfill model that reproduces the results of classical elasticity, and establish an analogy with the problem of hydrodynamic pressures on a vertical wall. A. Arias, F. Sanchez Sesma. HRIS 63. ACTIVE

(207) Compacted Soils (Fourth Stage). To investigate the behavior of compacted soils (fourth stage) through an experimental program to obtain the mechanical and mineralogical properties of four typical soils. R. Marsal, J. Alberro, M. Mendoza. HRIS 61. ACTIVE

(208) Expansive Soils (Second Stage). To use a model for expansive soil behavior which will analyze information from published historical cases and experimental data obtained from two instrumented light structures over expansive soils. M. Romo. HRIS 61. ACTIVE

(209) Research on Granular Materials. To use recently developed equipment to laboratory test sand under triaxial plane-strain and odometer, and triaxial testing of sand at high stress levels. R. Marsal, J. Alberro, M. Mazari. HRIS 34. ACTIVE

(210) Contact Forces on Granular Materials. To use a two-dimension photoelastic model with circular particles to define contact forces, studying their distribution and magnitude. A. Olivares, J. Alberro. HRIS 34. ACTIVE

(211) Design and Construction of a Suspended Bridge for Low Cost Roads. Where an ordinary bridge cannot be afforded, to build from an existing prototype a suspended platform moved by the wheels of the vehicle crossing the span or by a winch. M. Aguirre, E. Bazán, A. Olivares. HRIS 25. (Citations) COMPLETE

(212) Mathematical Models for Rainfall Run-Off Relations in Urban Zones. To develop a mathematical model which takes into account fast changes in the run-off regime caused by urbanization. F. Aparicio, R. Dominguez. HRIS 22. ACTIVE

(213) Integration of Research Projects on Urban Hydrology and Hydraulics. To integrate studies on: Determination of design rainfall; revision of the drainage system; description of the mathematical model used to analyze flood routing; flood routing through a system of interconnected dams; model to simulate a water supply system. R. Dominguez, O. Fuentes, V. Franco, T. Carloz. HRIS 22. ACTIVE

(214) Urban Hydrology. To instrument four pilot urban watersheds to simulaneously measure heavy storms and the resulting run-off. R. Dominguez, V. France. HRIS 22. ACTIVE

(215) Studies and Design Manual for Industrial Developments. To design a manual for implementation of industrial development including feasibility and basic engineering studies, urbanistic design and development strategies. J. Antun. HRIS 12. (Citations) ACTIVE

(216) Micro-Location of Industrial Parks. To determine the site of a feasible industrial park considering engineering restraints, environmental and socio-economic impacts. J. Antún, V. Fuentes, R. Aguirre. HRIS 12. (Citations) COMPLETE

(217) Urbanistic Guidelines for Industrial Developments. To develop urbanistic guidelines for design of industrial parks to be included in the "Program of Industrial Urban Development in Mexico." J. Antún, F. Sãnchez. HRIS 12. (Citations) COMPLETE

1. b. Graduate Division, Faculty of Engineering: Ciudad Universitaria, Mexico 20, D. F.

(2) Sand Liquefaction. To develop new criteria on sand liquefaction including theory and design of equipment. A. Diaz, A. Echevarria. HRIS 62. ACTIVE

(3) Expansion Potential in Typical Expansive Soils. To test typical expansive soils in various moisture contents and load ranges so as to enable prediction of amount of expansion and recommendations for foundations under specified conditions. L. Zeevaert and F. E. Sanchez. HRIS 62. COMPLETE

(6) Variation of Shear Strength Parameters Due to Changes in Water Content in Expansive Soils. To correlate the strength parameters of expansive soils and degree of saturation. E. E. Roy, L. Zeevaert. HRIS 62. ACTIVE

(7) Numerical Models to Study Sand Liquefaction. To develop new models which may discard some of the existing restraints of the methods in use. V. Porras, A. Diaz. HRIS 62. ACTIVE

(8) Analytical Approximation of the Stress-strain Curves for Sands. To develop a methodology to analyze the laboratory results in order to make analytical approximations of these curves. M. Gutierrez, A. Diaz. HRIS 62. COMPLETE

New Projects

(9) Implementation of the Giant Simple Shear Strength Equipment. To implement simple shear strength equipment (30x60x90 cm) to perform dynamic testing of sands. A. Díaz-Rodríguez. HRIS 62. ACTIVE

(10) Study of Some Aspects of the Seismic Response of Earth and Rock Fill Dams. To define constitutive equations of materials used and determine seismic response of the dam. A. Díaz-Rodríguez, R. Cervantes-Beltrán, V. Porrás-Silva. HRIS 62. ACTIVE

(11) Compressibility of Granular Materials. To develop a general equation for soil compressibility under an isotropic stress state. E. Juárez Badillo. HRIS 62. ACTIVE

(12) Sand Liquefaction. To develop a new criteria of sand liquefaction, including both theory and design of equipment. A. Díaz, A. Echevarria. HRIS 62. ACTIVE

(13) Variation of Shear Strength Parameters Due to Changes in Water Content in Expansive Soils. To correlate strength parameters of expansive soils and degree of saturation. E. Rey, L. Zeevaert. HRIS 62. ACTIVE

(14) Numerical Models to Study Sand Liquefaction. To develop a new sand liquefaction model which may discard some of the existing restraints of the methods in use. V. Porras, A. Díaz. HRIS 62. ACTIVE

2. MINISTRY OF HUMAN SETTLEMENTS AND PUBLIC WORKS (Secretaria de Asentamientos Humanos y Obras Publicas SAHOP): Xola y Universidad, Mexico 12, D. F.

b. General Directorate of Systems Engineering: Same address

(26) Information System SIDI - SAH. This system stores a number of socio-economic indicator historical values to support action programs stated by the "National Program for Urban Development." F. J. Jauffred, G. Argil. HRIS 15. COMPLETE

(28) Simulation Model to Determine Capacity of Mexico City International Airport. To determine the capacity of the airport in terms of delay to aircraft. F. J. Jauffred, C. Ayala-Izaguirre. HRIS 55. COMPLETE

MEXICO (contd)

New Projects

2. b. (29) Pacific Airport System. Presentation of a model for planning an airport system, using lineal and dynamic programming and simulation. R. Felix-Valdés, F. Jauffred, J. Acosta-Flores. HRIS 12. COMPLETE

(30) Choice of Contractors to Participate in Biddings. A system to select contractors taking into account their work capacity, speciality, working zone and degree of fulfillment. F. Jauffred, A. Moreno-Bonett, C. Ayala-E-Izaguirre. HRIS 11. COMPLETE

(31) Methodology to Adjust Investment Programs Due to Inflation. To apply statistical techniques to adjust investment programs due to inflation accounting for cost increases and budget adjustments. F. Jauffred, A. Moreno-Bonet, C. Ayala-E-Izaguirre. HRIS 15. ACTIVE

(32) Model to Simulate Airport Capacity. To simulate operation of an airport both in air space and ground facilities. F. Jauffred, C. Ayala-E-Izaguirre. HRIS 12. COMPLETE

(33) Simulation of the Terminal Area of an Airport. To simulate several alternatives of physical configuration of terminal building facilities and apron positions. F. Jauffred, A. Moreno-Bonett, C. Ayala-E-Izaguirre. HRIS 12. COMPLETE

(34) Methodology to Validate a Simulation Model for Airport Capacity. To develop a methodology applying statistical techniques which allows for the comparison of the simulation model results and those of the sampling. F. Jauffred, C. Ayala-E-Izaguirre. HRIS 12. ACTIVE

(35) Information System on Contractors. A register reflecting characteristics of contractors including general description, location of working zones, degree of fulfillment and contracts. E. Jauffred, A. Moreno-Bonett, C. Ayala-E-Izaguirre. HRIS 11. COMPLETE

(36) Integrated Information System for the Under-Secretariat of Public Works. (SISI-SOP). An integrated information system covering both the technical and administrative areas of the Ministry of Human Settlements and Public Works. F. Jauffred, J. Figueroa. HRIS 11. COMPLETE

(37) Information System SIDI-SAH. An integrated information system storing socioeconomic indicators used for decision making for studies of the National Program for Urban Development. F. Jauffred, G. Argil. HRIS 15. COMPLETE

c. General Directorate of Investment Analysis: Calle Lago Pte. 16, 2^{o} Piso

(3) Priority of Investments in Highway Projects. To establish priority of investments in highway projects, based on minimization of transportation costs at a national level. HRIS 14. INACTIVE

(4) Motor Vehicle Operating Costs. To develop a computer program for determining vehicle operating costs in relation to highway characteristics. A. Gonzalez, J. Traslosheros, G. Perez. HRIS 16. COMPLETE

(12) Analysis of Projects Using Multicriteria. Study to establish the possibility of introducing a series of indicators reflecting the operation of each project to reach different objectives which, combined in a convenient form, will permit a unique value and, when applicable, a classification of projects. V. Contreras, R. Ortiz. HRIS 11. INACTIVE

2. c. (13) Criteria for Determining a Program for Modernization of Highways. Definition of criteria for use in developing a program for highway modernization, including the determination of traffic volumes necessary for economic justification of modernization or reconstruction. A. Becerrill T., J. G. Casillas. HRIS 12. COMPLETE

(17) Highway Vehicle Operating Costs. Adjustment of studies in other countries to meet Mexican conditions for determining operational costs. V. M. Contreras V. HRIS 16. COMPLETE

(18) Highway Improvement Operation Costs. Analysis of the capacity, operation cost and investment in highways of different types to determine a program of improvements. V. M. Contreras V., A. B. Tellez G., E. Moreno Mejia. TRIS 14. INACTIVE

(19) Techniques for the Prospective Planning of the National Development. Study and evaluation of the prospective techniques in connection with their use in this planning. D. Diaz D., M. Navu U., R. Pruneda. HRIS 12. COMPLETE

(20) Prospective of the Interurban Transport System in Mexico. To analyze the scope of the systems related to transportation and to develop strategies to meet their objectives. D. Diaz D., M. Navu U., R. Pruneda P. HRIS 13. COMPLETE

(21) Criteria to Define a National Program for Highways. Develop and implement a traffic assignment-and-distribution model to define a National Program for Highways projected to 1995. M. Navu U., V. Contreras V, A. Becerrill T. G. HRiS 13. COMPLETE

(22) Distribution of Roads in the Mexican Republic. Implementation of models to determine quantitative relationships between length of roads in each State and its socio-economic characteristics. D. deAlva P. HRIS 15. COMPLETE

(23) Use of the Incremental-Cost-Benefit Theory to Determine Priorities of Road Construction. X. Gonzalez A., O. Cerda H. HRIS 15. COMPLETE

(24) Determination of the Foreign Component in Road Construction. To calculate the direct component and induced production related to road construction. A. Becerril T.G., X. Gonzalez A., O. Cerda H., V. Contreras V. HRIS 15. COMPLETE

(25) Development of Criteria for Highway Financing. To determine the adequate allocation of funds for road construction among the States when using resources obtained through gasoline taxes. V. Contreras V., F. Carrillo de V., X. Gonzalez A., A. Becerrill T. G., O. Cerda H. HRIS 14. COMPLETE

(26) Use of Socio-Economic Indicators for the Regionalization of the Country. Determination of regions with various degrees of development, taking into account a study of the main social and economic indicators. V. Contreras V., G. Cruz B. HRIS 15. COMPLETE

(28) Long Term Relationships Between Road and Railroad Infrastructures. To define the important factors and variables whose analysis enables determination of development policies for the road and railroad systems, using prospective techniques by means of normative and reference settings. D. Diaz-Diaz., M. Nava U., G. Cruz B., Fundacion Javier Barros, Sierra. HRIS 12. COMPLETE

2. c. (29) Road Project Evaluation Model with Variable Preference Functions. To implement a model of road evaluation using the preference method and introduction of factors which show changing situations. V. Contreras V., E. Moreno M. HRIS 13. COMPLETE

(32) Method for Traffic Forecasts. To define a method for traffic forecasts considering the evolution of economic activity divided by sectors, using an econometric model. A. Becerrill T., O. deBuen R. HRIS 55. COMPLETE

New Projects

(33) Long Term Relationships Between Road and Railroad Infrastructures. To determine development policies for the road and railroad systems using prospective techniques by means of normative and reference settings. D. Díaz D., M. Nava U., G. Cruz B. HRIS 12. COMPLETE

(34) Prospective of the Vehicle Structure in Mexico for the Period 1980-2000 and Its Probable Territorial Distribution. To analyze vehicle production and distribution, and its traffic density within the economic zones of the country, in order to plan the vehicle structure in Mexico for the period 1980-2000. R. Viniegra V., J. Fonseca R. HRIS 13. ACTIVE

(35) Federal-State's Investment Analysis Made by SAHOP. An investment analysis made by SAHOP for each Federal State in Mexico for a better financial resource distribution in the short term. M. Rodríguez M., R. MacGregor A. HRIS 14. ACTIVE

(36) Auxiliary Techniques for the Application of Prospective and Regional Analysis Surveys. To develop new research methods for projects related to global planning, natural resources or regional development. D. Díaz D., M. Navu U. HRIS 12. ACTIVE

(37) Road Project Evaluation Model with Variable Preference Functions. To implement a model of road evaluation using the preference method and factors which show changing situations. V. Contreras V., E. Moreno M. HRIS 13. COMPLETE

(38) Method for Traffic Forecasts. To define a method for traffic forecasts considering the development of economic activity divided by sectors, using an econometric model. A. Becerrill T., O de Buen R. HRIS 55. COMPLETE

(39) Prospective of the Development of Explosive Growing Zones in Mexico. To develop prospective development plans which will provide the best balance between natural resources exploitation and the environment in the short, medium and long terms in areas likely to experience rapid growth. D. Díaz D., J. Zarco M. HRIS 12. ACTIVE

e. General Directorate of Airports: Xola 1755, Mexico 12, D.F.

(11) Analysis of Benefits Derived from Airport Operation. To determine the regional direct and indirect benefits derived from airport operation, so as to evaluate the convenience of constructing new facilities. E. Luna T., J. de la Madrid V. HRIS 15. COMPLETE

(12) Feasibility Studies for Construction of New Airports. Through market and benefit-cost studies, to evaluate the convenience of investing in new airports in Mexico. E. Luna T., J. de la Madrid. HRIS 15. COMPLETE

(16) Feasibility Studies for Construction of New Airports. To evaluate the convenience of investing in new airports through market and cost-benefit studies. E. Luna T., S. Sanchez, J. Ibarra. HRIS 12. COMPLETE

2. e. (17) Maintenance of Airports (Second Stage). A study of the adequacy of procedures for maintenance of the various elements of the aircraft-ground system. F. Rodarte L., F. Gaytan R., S. Loyo G. HRIS 40. COMPLETE

(18) Studies on the Environmental Impact Due to the Construction and Operation of Airports. Environmental studies of the impact caused by emissions of aircraft and ground vehicles in the airport and related facilities. J. Ibarra, E. Luna T., F. Rodarte L., J. de la Madrid. HRIS 17. ACTIVE

New Projects

(19) Cost of Delays in the Mexico City International Airport. A study of the cost of peak hour delays of aircraft assuming construction of the new airport is deferred until 1988. E. Luna-Traill, J. de la Madrid V., J. Ferrer L. HRIS 12. COMPLETE

(20) Air Space Capacity Study for the Simultaneous Operation of the Present Airport in Mexico and the New One Planned in Texcoco (First Stage). A study to analyze the possibility of simultaneous operation of the present airport and the one planned in the former Texcoco Lake, during the 1982-1988 stage. E. Luna-Traill, J. de la Madrid V., G. Montes, J. Ferrer L. HRIS 13. COMPLETE

(21) Study of Hourly Maximums for the Design of Facilities in the New Mexico City Airport in Texcoco. To obtain hourly maximum values for passenger volume, aircraft operations and simultaneous aircraft positions in aprons in order to design airport facilities. E. Luna-Traill, J. de la Madrid V., S. Sanchez L., M. Angulo S. HRIS 13. COMPLETE

(22) Behavior of the Foundation Soil at the Former Texcoco Lake Due to the Construction of a Full Scale Taxiway Model. A study to determine the behavior of the high plasticity clays at the site of the former Texcoco Lake in connection with design of pavements for the new airport. E. Luna-Traill, J. de la Madrid V., F. Rodarte L., L. Aguirre M. HRIS 62. ACTIVE

(23) Pavement Construction Procedures to Reduce Disturbance of the Clay Foundation Soil in Texcoco Lake. To determine construction procedures and proper equipment to avoid disturbance of the high plasticity clays at the site of the new airport. E. Luna-Traill, J. de la Madrid V., F. Rodarte L., E. Montelongo, J. Prado T. HRIS 62. ACTIVE

(24) Textural Characteristics of Airfield Pavements. To establish maintenance policies through measurement of textural characteristics of pavements by use of profile index and friction-coefficient values. R. Tellez G., R. Damián, L. Faydella, C. López, F. León. HRIS 24. ACTIVE

(25) Evaluating Pavement Strength at Mexican Airports (3rd Stage). To establish aircraft weight limits and recommend rehabilitation strategies of both rigid and flexible pavements. R. Tellez G., R. Damián, F. León, L. Faydella. HRIS 24. COMPLETE

(26) Feasibility Study to Develop a Commerce and Hotel Zone in the New Mexico City Airport in Texcoco. To study the economic and financial feasibility of the zone in order to assess the socioeconomic impact. E. Luna-Traill, J. de la Madrid V., V. Contreras, F. Martinez. HRIS 12. ACTIVE

(27) Feasibility Analysis for the Development of Aviation Related Industries in the New Mexico City Airport in Texcoco. To determine non-contaminating industries, evaluate socioeconomic impact, determine size and type of urbanization and study the economic and financial feasibility. E. Luna-Traill, J. de la Madrid V., V. Contreras, F. Martínez. HRIS 12. ACTIVE

MEXICO (contd)

New Projects (contd)

2. e. (28) Studies on the Environmental Impact Due to the Construction and Operation of Airports. Determination of aircraft noise levels and emissions for planning purposes in vicinity of airports. E. Luna T., F. Rodarte L., J. de la Madrid. HRIS 17. (Citations) ACTIVE

f. General Directorate of Technical Services (Direccion General de Services Tecnicos): Xola y Universidad, Mexico 12, D. F.

(6) Embankments on Soft Soils. Use of sand drains in one test embankment for rapid consolidation, and instrumentation in this and three others in order to obtain information on the performance of embankments on soft soils - variation in shear strength and consolidation process. A. Rico, G. Moreno, G. Garcia. HRIS 62. COMPLETE

(7) Hydrological Analysis in Small Drainage Basins. To develop methods for hydrological analysis to determine design discharge on a regional basis with correlation among regions. A. Monforte, F. J. Pena, M. Jara. HRIS 22. ACTIVE

(8) Stability of Embankments on the Lake Texcoco Area of the Valley of Mexico. To study vertical and horizontal deformation of embankments and foundation soils as a function of time and compare with established consolidation theories. A. Rico, G. Moreno, G. Garcia. HRIS 62. ACTIVE

(15) Longitudinal Cracking of Highways. Correlation of longitudinal cracking of highways with embankment construction as affected by volume change due to moisture contents and seasonal changes. A. Rico R., J. M. Orozco y O. HRIS 62. ACTIVE

(18) Embankments on Soft Foundations. Use of sand drain in a test embankment to accelerate its settlement. A. Rico R., G. Moreno, G. Garcia. HRIS 62. (Citations) COMPLETE

(19) Longitudinal Cracking of Highway Embankments. Correlation of longitudinal cracking of highway embankments with volume changes due to water content during seasonal variations. A. Rico, J. M. Orozco. HRIS 62. (Citations) COMPLETE

(22) Scour in Low Water Bridges. Measurement of scour action in an hydraulic model, with dimentional analysis used to estimate actual damage in real structures. A. M. Monforte, R. O. Xelhuantzi, Hernandez. HRIS 22. ACTIVE

(26) Sulphur-Asphalt for Stabilization of Sand Bases (Preliminary Stage). To improve stability of sand bases under adverse conditions by using various sulphur-asphalt-sand mixes. F. A. Rangel, J. Munoz, L. C. Hernandez. HRIS 34. COMPLETE

(27) Use of Waste-tire Rubber in Asphaltic Concrete Mixes (Preliminary Study. A study of the most convenient form to mix the asphalt and the waste-tire-rubber, and a determination of strength and deformation characteristics of the mixes. F. A. Rangel. HRIS 34. COMPLETE

(28) Characteristics of Filter Materials Used in Road Subdrains. Studies of grain size distribution of filter materials, permeability, contamination by fine soils, and segregation due to placing procedures. G. Moreno, H. Juarez. HRIS 34. ACTIVE

(30) Design Vehicles in Mexico. To examine vehicle types in Mexico, select several general class groupings and establish representative vehicle size within each class, for design purposes. C. Escalante, V. Ranirez. HRIS 53. ACTIVE

2. f. (31) Damping of Oscillations of a Slender Structure on Soft Soil Due to Aircraft Vibration. A study of the damping of oscillations of a slender structure with a pile-and-box foundation on soft soil. G. Moreno. HRIS 61. COMPLETE

(32) Research on a Method to Prevent the Formation of Tension Cracks. To develop an effective method of preventing the formation of tension cracks in the fine, plastic and compressible clays of Texcoco Lake. A. Rico, E. Juarez, G. Moreno. HRIS 62. ACTIVE

(34) Impact of Bypass Traffic on Urban Development. To study the effects of a bypass road on the urban development and to establish significant relationships between the bypass traffic and the socio-economic characteristics of the city under study. C. Ascalante, J. Silva. HRIS 15. INACTIVE

New Projects

(35) Research on a Method to Prevent the Formation of Tension Cracks. To develop an effective method of preventing the formation of tension cracks in the fine plastic and compressible clays of Texcoco Lake. E. Juarez, A. Rico, G. Moreno. HRIS 62. (Citations) ACTIVE

(36) Characteristics of Filter Materials Used in Road Subdrains (Second Stage). To study grain size distribution of filter materials used to drain fine soils and observation of changes in the permeability of the filter material due to contamination caused by the fine soil. G. Moreno, H. Juarez. HRIS 22. ACTIVE

(37) Optimum Location of Continuous Traffic Count Stations. To determine optimum location of traffic count stations by correlation analysis and simulation. C. Escalante, V. Ramírez. HRIS 55. ACTIVE

(38) Design Vehicles in Mexico. To examine all vehicle types, select general class groupings, and establish representative size vehicles within each class for design. C. Escalante, V. Ramírez. HRIS 53. ACTIVE

(39) Road's Bumpers. To determine the effects of the road's bumpers on driver behavior and pedestrian safety. C. Escalante, V. Ramírez. HRIS 54. ACTIVE

(40) Scour in Low Water Bridges. To measure scour action in a hydraulic model with dimensional analysis to be used to estimate damage in actual structures. A. Monforte, R. Xelhuantzi, R. Hernandez. HRIS 22. ACTIVE

(41) Hydrological Analysis in Small Drainage Basins. To develop methods of hydrological analysis to determine design discharge on a regional basis with correlation among regions. A. Monforte, F. Peña, M. Jara. HRIS 22. ACTIVE

(42) Longitudinal Cracking of Highway Embankments. To correlate longitudinal cracking of highway embankments with volume changes due to water content seasonal variations. A. Rico, J. Orozco. HRIS 22. (Citations) ACTIVE

(43) Stability of Embankments on the Lake Texcoco Area of The Valley of Mexico. To study vertical and horizontal deformation of embankments and foundation soils as a function of time and compare with established consolidation theories. A. Rico, G. Moreno. HRIS 22. ACTIVE

g. General Directorate of Rural Roads (Direccion General de Caminos Rurales):
Dr. Vertiz 1243 5^{o} piso, Mexico 12, D. F.

(1) Cost Analysis of Rural Roads in Mexico. A comparison of costs of constructing rural roads by hand labor and by using machines. R. Salinas de G., R. Flores B., A. Victoria. HRIS 33. COMPLETE

2. g. (2) Intermediate Technology in Mexico. Study of advantages of using hand labor construction in civil engineering as an intermediate technology. R. Salins de G. HRIS 33. COMPLETE

(4) Experimental Tests on Prototypes of Rural Roads in Mexico. Experimental studies to determine an economical and good performance structural section for several specific areas with different soil and climatic characteristics. Flores B., J. M. Orozco, R. Olguin. HRIS 33. COMPLETE

(5) The Agricultural Tractor in the Construction of Low-Cost Rural Roads. To develop an intermediate technology for this type of project, utilizing agricultural type tractors and avoiding need for importing heavy equipment. R. Flores B. and others. HRIS 41. COMPLETE

6. MONTERREY TECHNOLOGICAL INSTITUTE (Instituto Technologico de Monterrey): Sucursal de Correos "J," Monterrey, Nuevo Leon

a. Civil Engineering Dept.: Same address

(6) Correlation Between Several Techniques for Determining the CBR in the Laboratory. Correlation between several methods for estimating the CBR through laboratory testing. C. Crespo-Villalaz. HRIS 62. ACTIVE

7. MEXICAN INSTITUTE OF PLANNING SYSTEMS OPERATION (Instituto Mexicano de Planeacion y Operacion de Systemas): Insurgentes sur 586-402, Mexico, D. F.

New Projects

(5) Model for Road Evaluation. A computer model to allow multiple objective evaluation of road projects and model structure updating and to perform sensitivity analysis over main parameters. S. Zúñiga, J. Anchondo-Adalid, L. Pascacio. HRIS 12. (Citations) COMPLETE

(6) Socio-Economic Evaluation of Rural Roads. A methodology to include social as well as economic factors in the rural road evaluation. S. Zúñiga, A. Olivera. HRIS 15. (Citations) COMPLETE

(7) Forecasting Model for Passengers in Three Mexican International Airports. To forecast with econometric models domestic and international passengers at Guadalajara, Monterrey and Acapulco airports. S. Zúñiga, A. Olivera. HRIS 16. (Citations) COMPLETE

8. GENERAL DIRECTORATE OF FEDERAL ROAD TRANSPORT (Direccion General De Autotransporte Federal): Eugenia No. 197 - 8° piso, Mexico 12, D. F.

New Projects

(1) Road Transport Data Bank of the Federal Public Service. To design the data bank and its implementation using electronic systems in order to generate statistics on the operation of the Service. I. Monroy O. HRIS 12. (Citations) ACTIVE

(2) Reglementation on the Weight and Physical Characteristics of Vehicles. Regulations to establish the allowable weight and dimensions of vehicles which operate on federal roads. A. Fregoso, A. De-la-Rosa. HRIS 53. (Citations) ACTIVE

New Projects (contd)

8. (3) Mechanical Diagnostic Centers for the Public Federal Road Transport Service. Studies to design, locate and implement in the country mechanical diagnostic centers for vehicles of the Federal Road Transport system. F. De-Garay, C. Gonzalez-Arriaga. HRIS 53. (Citations) ACTIVE

(4) Standard Specifications and Methods of Test for Diesel Fuel. To develop specifications and methods of test for diesel fuel to be used in road transport. J. González C. HRIS 17. (Citations) ACTIVE

MOROCCO

Resurvey - 1980

Nicolas E. Manasseh

The 1980 survey of Morocco was made by Professor Nicolas E. Manasseh and shows 62 projects, 15 being reported for the first time, with 26 listed as completed. In carrying out this survey, the following organizations and persons assisted Professor Manasseh:

Directorate of Roads:	Mr. Mohamed Kabbaj, Director Mr. Mbdelaali Oulhaj, Chief, Technical Division Mr. Edouard de Sambucy, Technical Adviser

National Center for the Monitoring and Observation of Roads (CNAC):
Mr. Othman Fassi-Fihri, Chief

Testing and Research Laboratory:	Mr. Ahmed Hakimi, Director Mr. M. Mariotti, Deputy Director

1. MINISTRY OF PUBLIC WORKS AND COMMUNICATIONS (Ministere des Travaux Public et des Communications): Rabat

a. Public Laboratory for Testing and Research (Laboratoire Public d'Essais et d'Etudes): 25 rue d'Azilal, Casablanca

(4) New Design Criteria for Bituminous Roads Based on Fatigue Studies. Laboratory tests to find behavior of multi-layered structures, and application in field scale test sections. Staff. HRIS 24. COMPLETE

(7) Measurement of the Resistance to Erosion by Flowing Water. To study the abrasive effect of water in motion in relation to grading of soil particles, plastic index, soil structure, clay agglomerations, etc. M. Mariotti, C. Nerbonne. HRIS 23. ACTIVE

(11) Stabilization of "Tirs" (Black Cotton Soils) with Lime. To determine minimum quantity of lime necessary for stabilization and precautions to observe in order to assure success of the treatment. M. Maurice. HRIS 62. ACTIVE

(12) Comparison of Effectiveness of Different Materials for Base Courses. To compare the effectiveness of different base course materials under static and dynamic loadings. Staff. HRIS 62. ACTIVE

(13) Research on a Rational Concept for Flexible Pavements. Studies of various rational design methods for flexible pavements, including designs with strong fabric reinforcing of synthetic fibers at the lower level, in order to test the effectiveness of the reinforced designs, as compared with the performance of traditional designs. Mariotti, Morgenthaler, Verrier. HRIS 24. ACTIVE

(17) Inspection and Control of the Highway System. Periodic measurements of deflections to evaluate effects of soil and traffic to establish a method of roadway reinforcement. Staff. HRIS 24. ACTIVE

(18) Compaction of Rock Embankments with Water. A study to determine the amount of water applied by spraying that is necessary to properly compact an embankment. Staff. HRIS 62. COMPLETE

(19) Behavior of Marl and Clay Embankments. An experimental study to define the minimal requirements of compaction and depth to ensure stable embankments. Staff. HRIS 62. COMPLETE

1. (20) Compaction of Dry Soils. A determination of the minimum amount of water needed to permit use of dry compaction methods. Staff. HRIS 62. ACTIVE

(21) Correlation between the Plate Test, Dynamic Tests and Deflection Measurements. To establish a correlation between the several tests, so a choice could be made of the most appropriate test in a particular situation. Staff. HRIS 62. ACTIVE

(24) Correlation between Tests: Los Angeles, Deval Dry and Wet Impact Test. To establish a correlation between these tests and to tie them into rock properties, especially their resistance to compression and their porosity. Staff. HRIS 35. ACTIVE

(25) Modification of Acceptance Tests for Bituminous Binders. To improve the methods being used and develop better quality control. Staff. HRIS 31. ACTIVE

(26) Use of Deflection Measurements to Control Compaction. To develop a method for accepting the various layers of a pavement through the use of deflection measurement. HRIS 33. COMPLETE

(27) Spectrum of Axle Loads on the Roads of Morocco. To define axle loads and their magnitudes and frequencies in certain roads, regions and the country as a whole, using a dynamic weighing bridge sunk into the pavement which counts moving vehicles and tabulates axle loads automatically into prearranged load ranges. HRIS 55. ACTIVE

(28) Observation of Experimental Road Sections. To establish the usefulness and limits of local materials for pavements by observing field performance. HRIS 24. COMPLETE

(29) Prospecting for Fine Aggregates for Concrete in the Casablanca Region. Investigating of new sources for this fine aggregate so as to eliminate the destruction of coastal dunes in the beach areas as well as endangering cultivation. HRIS 35. COMPLETE

(30) Investigation of the Condition of the Road System. Periodic deflection measurements and field tests to determine the changes in the system due to traffic and types of soil. HRIS 24. COMPLETE

(31) Erodability of Clayey Soils. A study of the seasonal volumetric changes of these soils to determine methods to curtail fissures and loss of stability of embankments and slopes. HRIS 64. FUTURE

(32) Rational Study of Fatigue in Flexible Pavements. An investigation of pavement behavior when failure occurs due to fatigue and develop a more rational design method to overcome this failure. HRIS 24. FUTURE

(33) Pavement Behavior on "Tirs" Soils and Clayey Soil. To find solution to prevent failure of embankments and slopes due to volumetric changes caused by climatic conditions. HRIS 63. FUTURE

(35) Creation of Artificial Landslides. To produce external elements which will cause sliding in a natural mass and thus be able to study the result while in control of all parameters related to sliding. HRIS 63. FUTURE

(36) General Survey of Roads. Continued high-efficiency survey of the Moroccan road network for general evaluation and development of general policy. HRIS 24. COMPLETE

(37) Monitoring of Experimental Road Sections. Continuous detailed monitoring of experimental road sections, focusing on a method to dimension and reinforce highways which will be applicable to the entire Moroccan road network. HRIS 24. COMPLETE

1. (39) Range of Axle Weights. To gain better knowledge of traffic and load per axle of heavy vehicles by using data from dynamic weight scales at several points in the Moroccan road network. HRIS 55. COMPLETE

(40) Measures of Deflection for Control of Compaction. Continued monitoring of road construction sites, using the Lacovix deflectometer while comparing this with other deflection measurement methods. HRIS 62. COMPLETE

(41) Studies to Remedy the Shortage of Sand in Certain Areas of Morocco. In order to satisfy need for greater quantities of sand without using up beach sands, explorations are to be undertaken to identify possible new sources, and to estimate costs of production. HRIS 35. COMPLETE

New Project

(42) Use of Bituminous Schist Powder as Filler in Asphaltic Concrete. To determine the possibility of using powder produced in crushing bituminous schist as filler in the production of asphaltic concrete and reduce the amount of bitumen used in the mix. HRIS 31. ACTIVE

d. Directorate of Roads: Rabat

(1) Observations on the Behavior of Roads Built on "Tirs" (black cotton soils). To assess the value of road construction methods developed from laboratory studies. Staff. HRIS 62. INACTIVE

(6) Social Consequences of Road Accidents. A critical analysis of the occurence of accidents and their causes and their socio-economic effects in an attempt to improve road safety measures and reduce accidents. HRIS 51. INACTIVE

(7) Transportation Plan of Greater Agadir. Study of medium-and long-term public works to meet development needs of Agadir (200,000 population today, estimated 1,000,000 by 2000). HRIS 12. ACTIVE

New Projects

(8) To Promote the Gradual Introduction of the Arabic Language in the Operations of the Ministry. To prepare a glossary and other documents for use of the Ministry in a replacement program of the French language which is used presently. HRIS 11. COMPLETE

(9) Classification and Renumbering of the Road Network. To reclassify the national road network according to their functions into four categories and propose a new system for numbering them. HRIS 11. ACTIVE

(10) Road Master Plan for the Souss-Aval Region. To establish a master plan for roads in the agricultural region of Souss-Aval to assist in its economic development. HRIS 12. ACTIVE

(11) Measurement of Depth of Scour in River Beds During Flood Conditions. To analyze the relationship between flood discharge, velocity profiles, magnitude of the mass transported and depth of scour in order to design protection of river structures. HRIS 22. ACTIVE

(12) To Strengthen and Improve 700 KMS of National Roads. To study and recommend methods for the strengthening of pavements of 700 kms. of the National Road system. HRIS 24. ACTIVE

(13) Economic Comparison in the Use of Cut-Back Asphalt and Emulsion Asphalt. To study the possible saving in fuel and foreign exchange in the use of cut-back asphalt or emulsion asphalt. HRIS 31. COMPLETE

1. d. (14) To Solve the Problem of the Scarcity of Sand. To locate new sources of sand for construction purposes along river banks or the coast to relieve the scarcity in the regions of Rabat and Casablanca. HRIS 35. ACTIVE

e. National Center for Monitoring and Observation of Roads (Centre National d'Auscultation des Chaussees - CNAC), Directorate of Roads: Rabat

New Projects

(1) Inspection and Observation of the Road Network. To inspect and observe the National and Provincial Road Network using precision apparatus in order to organize maintenance operations. HRIS 40. ACTIVE

(2) Provisional Guidelines for Strengthening Pavements. To prepare guidelines for strengthening pavements by adapting known methods to conditions in Morocco, until a Moroccan method is developed. HRIS 24. ACTIVE

(3) Observation of the Behavior of Test Sections. To observe the behavior of sections of new pavements and compare theoretical and experimental models as a basis for decision whether to maintain the methods of design used or modify them. HRIS 24. ACTIVE

(4) Investigation of Road Accidents. To collect statistics and make special studies to detect whether accidents are due to defective design of the road at the accident location. HRIS 51. ACTIVE

(5) Evaluation of Traffic Survey Data. To study the data collected from traffic counts and evaluate the percentage of trucks on the road and find the range of axle loads through the use of dynamic weighing machines. HRIS 55. ACTIVE

(6) Information Bank on Roads. Creation of a highway data bank, and development of concepts applicable to Moroccan conditions for highway construction and management. HRIS 11. FUTURE

(7) Hydrology of Roads and Road Structures. To establish methods for estimating run-off under different geographical and hydrological conditions and propose designs for hydraulic structures to meet various situations. HRIS 22. ACTIVE

3. LOUIS BERGER INTERNATIONAL, INC.: 498 Avenue Mohamed V, Rabat

(1) Master Plan for the Regional Road System. To establish a master plan for a regional road system for the seven principal regions of Morocco, to fit the needs economic and social, for the next two five-year development plans. R. Kyriacos, J. P. Noel. HRIS 11. COMPLETE

(2) Traffic Signals and Lighting on the Casablanca Beltway. A study of the traffic on the beltway and preparation of a manual for installing signals and lighting. R. Kyriacos and staff. HRIS 54. COMPLETE

(3) Road Plan for the Industrial Zone of Ait Melloul. Study of the needs of this industrial area for a system of roads, water supply and drainage, including pollution control. R. Kyriacos and staff. HRIS 11. ACTIVE

(4) Study of Master Plans for Local Roads. A road investment planning tool suitable for local roads, the study of master plans is based on a multicriteria analysis of the importance of the roads, and is intended to define the level suitable for the 1987 study of regional roads. HRIS 12. COMPLETE

(5) Equipping the Industrial Zone of Ait Melloul. Study of the road, sewage, and water supply systems in the Ait Melloul industrial zone. HRIS 12. ACTIVE

(6) Study of Road Signs and Lighting on the Casablanca Urban Freeway. Installation of lights, road signs, safety guards, and various devices on the Casablanca Urban Freeway. HRIS 54. COMPLETE

4. SERETE, SOCIETE MAROCAINE D'ENGERERIE ET DE REALISATIONS TECHNIQUES:
34 Boulevard Mohamed V, Casablanca

(1) Transportation Plan for the City of Marrakech. To establish a short term plan to improve transportation in a city of about 500,000 inhabitants, including congestion in the crowded Casba section, while newer parts of the city are being developed as a winter resort. HRIS 12. ACTIVE

(2) Transportation Plan for the City of Agadir. To establish a short-term plan to improve transport in this important seaport and beach resort. HRIS 12. COMPLETE

(3) Study of Traffic and Transportation in Marrakech. Study of short-term projects to improve traffic conditions, and of medium-and long-term projects to cope with the development of metropolitan Marrakech and the increasing mobility of its population. HRIS 55. ACTIVE

5. CENTRE DE RECHERCHES ROUTIERS: Brussels, Belgium

(1) A Center for the Study and Observation of Road Pavements in Morocco. To organize this center for study of existing pavements and formulate methods that will forecast future behavior, and also to develop design methods for pavements adaptable to local conditions. HRIS 24. COMPLETE

6. SOCIETE D'ETUDES ET D'EQUIPMENTS D'ENTERPRISES: 5 Rue El Jadida, Rabat

(1) Standardization of Highway Structures. To establish a catalogue of standardized types of road structures that will simplify preparing contract documents and the control of construction. HRIS 25. COMPLETE

(2) Additional Study of Model Structures. This additional study deals chiefly with sloping structures, bridgeheads, and semisubmersible aprons. HRIS 25. ACTIVE

7. SOGELERG: 20 rue Jaffar as Saadik, Rabat

(1) Master Transportation Plan for the National Roads System. To prepare the plan to enable those responsible to implement a new 5-year development plan, to include future transportation needs, increase in vehicle ownership and safety improvement measures. HRIS 11. COMPLETE

8. SOGREAH, INGENIEURS CONSEILS: 47 Avenue Marie Reyoard, Grenoble, France

(2) Methodology of Estimating Runoff Flows at Highway Crossing Structures. To design methods for estimating runoff flows that must be considered when calculating water drainage outlets for highway crossing structures suitable to Moroccan hydrology. HRIS 22. COMPLETE

9. BUREAU CENTRAL D'ETUDES POR LES EQUIPMENTS D'OUTRE-MER (BCEOM):
10 Place des Alaouites, Rabat

(1) Transportation Plan for the City of Meknes. To develop a plan and propose solutions to the urban transportation problems that can be readily applied. HRIS 12. COMPLETE

(2) Traffic Plan of Meknes. Study of short-term public works projects to improve conditions of traffic, parking, and mass transport in Meknes. HRIS 54. COMPLETE

11. CENTER FOR TECHNICAL RESEARCH ON EQUIPMENT: 472 Avenue de Lattre 33019 Bordeaux, France

(1) Redesigning of Road Signs. To specify technical standards for completing a redesign and modernization program for road signs following recommendations of the Geneva International Convention, and to determine manufacture and implementation specifications for road signs. HRIS 54. COMPLETE

12. S.A.E.M. (Societe Africaine d'Etudes-Maroc) & S.A.F.E.G.E. (Societe Anonyme Francaise d'Etudes et de Gestion): 20 Bd. Rachidi, Casablanca

(1) Study of Traffic and Transportation Plan of the City of Fes. Study of short-term public works projects to improve traffic, and medium-and long-term ones to cope with the development of metropolitan Fes and the future increase in its population's mobility. HRIS 54. ACTIVE

THE NETHERLANDS

Resurvey - 1980

The 1980 survey of The Netherlands was conducted under the IRRD program. 144 projects are reported, 22 for the first time. 30 are listed as complete. Project reports were received by the IRF from the British Transport and Road Research Laboratory, the English language documentation center for the IRRD.

1. MINISTRY OF TRANSPORT, STATE ROAD LABORATORY (Rijkswaterstaat, Rijkswegenbouwlaboratorium): Van der Burghweg, 2600 GA, Delft

(49) Permanent Deformation of Bituminous Pavements. To investigate the relation between the rate of stress and the permanent deformation of bituminous pavements using wheel tracking tests and static and quasi-static creep tests. J. J. A. Gerardu, H. J. N. A. Bolk. HRIS 24. IRRD 601221. (Citations) ACTIVE

(50) Fatigue Tests of Bituminous Paving Materials. Dynamic testing of bituminous materials with a four-point bending apparatus to determine the relation between strain and paving life. J. J. A. Gerardu, W. van Aalst, H. J. N. A. Bolk. HRIS 24. IRRD 601222. ACTIVE

(51) Influence of Light-Colored Aggregate on Road Surface Temperature. Investigations on experimental road sections with light-colored aggregates to determine surface temperatures. S. Ros. HRIS 31. IRRD 601228 COMPLETE

(52) Influence of the Road Base on Mechanical Behavior of Pavement. Observations of the structural parameters and riding qualities of pavements laid on bases of different thicknesses and compositions. S. Ros, HRIS 62. IRRD 601229. (Citations) ACTIVE

(54) Polishing Tests. Use of the TRRL polishing machine and wheel tracking apparatus to carry out tests on bituminous pavement specimens. D. Hogervorst. HRIS 24. IRRD 602507. INACTIVE

(57) Sand-Cement Stabilization at Low Temperatures. Laboratory tests of compressive strength of specimens hardened at various temperatures to be compared with boring cores taken from experimental winter construction when frost sets in. J. D. Nieuwenhuis. HRIS 62. IRRD 602510. (Citations) COMPLETE

(64) Durable Road Marking Materials. Development or improvement of test methods for durable road marking materials (thermoplastics, spray plastics), the tests including identifying reactions for binders, physical composition and titanic oxide content. D. Hogervorst. HRIS 34. IRRD 603450. ACTIVE

(65) Reproducibility of Test Results. Statistical investigations into the reproducibility of results obtained from standard tests at the state road laboratory. H. Schram. HRIS 34. IRRD 603451. (Citations) ACTIVE

(66) Influence of Filler on the Mechanical Behavior of Bituminous Mixtures. Use of four-point bending of beams, a gyratory compacter, wheel track tester, creep test apparatus and splitting tensile test apparatus in tests of the influence of filler type and content on the mechanical properties of bituminous paving mixtures. J. J. A. Gerardu, H. J.N.A. Bolk. HRIS 31. IRRD 603452. COMPLETE

(68) Mechanical Properties of Pervious Asphaltic Concrete Mixtures. The mechanical properties of pervious asphaltic concrete mixtures are being tested by means of a gyratory compactor, a wheel track tester, a splitting tensile test apparatus, and, in the near future, a creep test apparatus. J. J. A. Gerardu, H. J.N.A. Bolk. HRIS 31. IRRD 603454. (Citations) ACTIVE

1. (69) Ice Warning Systems. Several ice warning systems are tested and improved in order to find a system workable from a technical and organizing point of view. Functional criteria and implementation are developed. J. H. Geerts, L. M. M. van Baal. HRIS 40. IRRD 603455. (Citations) ACTIVE

(70) Plastic Sheets in Road Construction. The efficiency of plastic fibre sheets for load distribution under embankments is tested by means of calculation models and by measurements in situ. Laboratory methods for testing plastic fibre sheets are being developed. A. C. Maagdenburg. HRIS 34. IRRD 603457 (Citations) ACTIVE

(71) Borehole Deformation Measurements. The mechanical properties of embankments are studied by comparison of pressiometer and rheotest (type Biarfz) measuring results with test results obtained with special triaxial apparatus. A. C. Maagdenburg. HRIS 62. IRRD 603458. (Citations) INACTIVE

(72) Hydraulic Filling of Sand. Studies of changes in particle size distribution of sand caused by hydraulic filling, development of the bearing capacity of silty sand fills, and drainage of sand embankments with mathematical models for the bearing capacity and drainage being checked by means of in-situ and laboratory tests. A. C. Maagdenburg. HRIS 62. IRRD 603459. (Citations) INACTIVE

(73) The Optimum Composition of Bituminous Surfacings for Steel Bridge Decks. The optimum composition of bituminous surfacings for steel bridge decks is studied, in particular by fatigue testing. D. Hogervorst, A. R. Kop. HRIS 31. IRRD 603460. ACTIVE

(74) The Relation Between Strength, Stiffness, Moisture Content and Density of Sand. In a triaxial apparatus by means of controlled vertical loading the relation between the strength, moisture content and density of sand is tested, and by controlled vertical deformation the relation between the stiffness, strength and density is determined. A. C. Maagdenburg. HRIS 62. IRRD 603461. (Citations) INACTIVE

(78) Relation Between the Coefficient of Friction and the Water-Layer Thickness. Measurement of friction on various types of surfaces with speed trailer at speeds varying from 50 to 130 kmh, and water layers up to 20 mm in depth. A. G. Welleman. HRIS 24. IRRD 604062. (Citations) COMPLETE

(80) Water Layer Thickness as a Function of the Length of the Drainage Path, Rain Intensity, Surface Texture and Crossfall of the Pavement Section. Use of a rain simulation device for testing on an area of 2x4 meters. A. J. ten Cate. HRIS 24. IRRD 604064. INACTIVE

(83) Viscosity of Bitumen-Filler Mixtures. Use of a Rotovisco and a sliding-plate viscometer to measure viscosity of various mixtures, varying amounts and types. H. J. N. A. Bolk. HRIS 31. IRRD 604067. COMPLETE

(84) Test Methods to Predict Plastic Deformation of Bituminous Pavements. Use of the creep test, wheel tracking test and triaxial compression test to predict plastic deformations. H. J. N. A. Bolk. HRIS 24. IRRD 604733. (Citations) ACTIVE

(85) Identification Tests on Synthetic Resins. To develop analytical methods for resin identification as well as other components of resinous mortars and wearing courses, paints, etc. G. Hogervorst. HRIS 34. IRRD 604734. INACTIVE

(87) Reflecting Road Studs. Laboratory and field tests of these studs for roadway marking for both temporary and permanent use. D. Hogervorst. HRIS 34. IRRD 604736. ACTIVE

THE NETHERLANDS (contd)

1. (88) Texture of Road Surfaces. Comparison of Dutch and foreign pavements for the relation between texture depth and skidding resistance. A.J. ten Cate, D. Hogervorst. HRIS 24. IRRD 604751. INACTIVE

(89) Skidding Resistance as a Function of Time. Periodic measurements of skidding resistance of various bituminous pavements. J. C. de Bree. HRIS 24. IRRD 604867. INACTIVE

(90) Longitudinal Evenness of Roads. To develop a system for rating evenness of roads obtained at a normal driving speed. B. J. T. Jong, A. J. J. Hendrike. HRIS 24. IRRD 605621. ACTIVE

(91) Testing the Falling-Weight Deflectometer. To investigate the suitability of the instrument for pavement design and determination of subbase modulus. J. Eikelboom, A. C. Pronk, R. Buiter. HRIS 24. IRRD 605622. ACTIVE

(93) Forecasting Strains and Soil Pressures. To investigate the suitability of a linear elastic multilayer model for the prediction of strains and soil pressures under a pavement. J. Ros, A. C. Pronk. HRIS 62. IRRD 605624. ACTIVE

(94) Influence of the Compaction Method on the Permanent Deformation of Bituminous Mixtures. Use of a wheel tracking test, a static creep test and the Marshall test on various mixtures and methods of compaction. H. J. N. A. Bolk, J. J. A. Gerardu. HRIS 33. IRRD 605625. ACTIVE

(95) Nuclear Density Measurements. Study of density and moisture content of sand layers up to 4 meters with a Gamma Transmission Densitometer. D. Veldhuis, W. F. J. de Jager, H. Grootveld. HRIS 34. IRRD 605626. (Citations) ACTIVE

(96) Prefabrication Drains for Vertical Drainage. To develop specifications and test procedures for prefabricated vertical drains. A. C. Maagdenberg, W. F. J. de Jager. HRIS 34. IRRD 605627. (Citations) ACTIVE

(97) Influence of Mixing and Compaction Methods on the Mechanical Properties of Bituminous Mixtures. To determine the influence of in-situ and laboratory mixing and compaction methods by means of creep and fatigue testing. H. J. N. A. Bolk. HRIS 31. IRRD 606336. ACTIVE

(98) Testing of Open Textured Asphaltic Concrete. To determine the dynamic stiffness modulus, the relative fatigue duration and the tensile strength of this asphaltic concrete. H. J. N. A. Bolk. HRIS 31. IRRD 606337. COMPLETE

(99) Use of Waste Material and Byproducts in Bituminous Mixtures. Testing of special mixtures in which the mineral aggregate and/or the binder are replaced by waste materials or by products. H. J. N. A. Bolk, C. F. Hendriks. HRIS 34. IRRD 606338. ACTIVE

(100) Use of Waste Materials in Roadbase. To determine the state of compaction of broken up asphaltic concrete suitable for roadbases, in order to design a cement-bound mixture. W. F. J. deJager, C. F. Hendriks. HRIS 34. IRRD 606339. (Citations) ACTIVE

(101) Experimental Sections of State Highway A-28 Overlay Construction in Concrete and Asphaltic Concrete. To establish criteria for the choice of type of pavement with a view to national design, maintenance and management of State highways. C. van de Fliert, J. J. A. Gerardu, D. Hogervorst. HRIS 24. IRRD 606340. (Citations) ACTIVE

(102) Investigation of the Behavior of Hardening Concrete. To determine the heat development in hardening concrete in order to revise Mandry's theory of cracking. P. E. Vogelaar. HRIS 32. IRRD 606341. ACTIVE

New Project

1. (103) Testing Broken Gravel. To gain insight into the variety of properties of broken gravel through abrasion resistance, particle shape, crushing value and impact value tests. D. Hogervorst. HRIS 35. IRRD 607027. ACTIVE

2. MUNICIPALITY OF AMSTERDAM (Gemeente Amsterdam): 197 Oudezijds Voorburgwal, Amsterdam, 1006

a. Department of Roads and Streets. Spaklerweg 54, 1099 BC Amsterdam

(2) Optimization of Tramway Design in Town Streets. A study to reduce noise and undulation in the track surface to reduce maintenance. A. Hulsbergen, G. J. A. Hille, P. over de Linden. HRIS 23. IRRD 601225. COMPLETE

(3) Fiber Reinforced Concrete as a Top Layer Between Tram Rails in Town Streets. To construct lanes for public transit and other vehicles between rails of existing tram tracks by use of this type concrete. A. Hulsbergen, G. J. A. Hille. HRIS 24. IRRD 602835. COMPLETE

(4) Use of Incinerator Slag as a Roadbase Material. Develop ways to insulate this slag against penetration of water so that it may be used for roadbase. A. Hulsbergen, G. H. Kellersman, J. van de Brink. HRIS 35. IRRD 604037 COMPLETE

b. Physical Planning Department: 3 Wibautstraat, 1091GH Amsterdam

(7) Periodical Traffic Counts. Counts are being made of all traffic at some 250 spots on workdays at different times between 3 p.m. and 7 p.m. in the Spring and Autumn, the date being computerized. J. J. van Walsum, J. C. van der Kley, W. Rijnders. HRIS 55. IRRD 603430. ACTIVE

(9) Influence of Alterations of Road Traffic. Measurements of traffic in Amsterdam during various road alterations, counts being made at junctions with queue length and journey times, together with studies of parking possibilities. J. J. van Walsum, B. Kassenaar, K. A. Brohm. HRIS 55. IRRD 603432. COMPLETE

(10) Periodical Parking Counts. Counts of parked cars in the agglomeration of Amsterdam on a work day. The counts being made every year in the Autumn with the times being 6 a.m., 3 p.m., and 9 p.m. J. J. van Walsum, W. de Bruin. HRIS 54. IRRD 603433. ACTIVE

(12) Development of Transport Patterns in the Conurbation of Amsterdam. Inquiries and counts at public transport stops with determinations of trip lengths and mode of transport, the observations being such that with a random test these components can be measured periodically. J. J. van Walsum, K. A. Brohm, J. Fujlstra. HRIS 55. IRRD 603435. ACTIVE

(14) Space and Time Research - Amsterdam. An explorative project aimed at making a contribution to the understanding of human behavior in an urban area, with a view to theory-building in the context of spatial and temporal analysis of the city system. V. Vidakovic. HRIS 12. IRRD 603437. (Citations) ACTIVE

(15) Chart of Traffic Noise Levels in Amsterdam. Develop a mathematical model to show the relationship between noise level and traffic intensity for different kinds of roads in an urban situation. H. B. Afman, B. Kassenaar, L. J. M. Scheurs. HRIS 17. IRRD 604084. (Citations) COMPLETE

2. b. (16) Transport Demand Analysis in Amsterdam. Analysis of factors influencing travel demand covering 13 relevant trip purposes, which could give an insight into factors determining modal split and accessibility. F. Le Clercq, J. H. van Walsum, K. A. Brohm. HRIS 12. IRRD 604752. (Citations) COMPLETE

(17) Development of Computer Programs for Transportation Planning Purposes. To develop a set of programs for a model which explains transport and traffic flows by means of socio-economic characteristics and transport system characteristics. F. Le Clercq, K. A. Brohm, Y. van Veen. HRIS 12. IRRD 604753. (Citations) COMPLETE

(18) Before and After Studies of Important Alterations to the Transport System in Amsterdam. Study of the effects on traffic counts, travel behavior, economic effects to trades people and noise and pollution as a result of opening of a metro-line and closing of a main radial road in favor of public transport. A. Buffing, H. Kleyn. HRIS 12. IRRD 604754. (Citations) COMPLETE

New Projects

(19) Before and After Studies of the Opening of the Metro-line in Amsterdam. To test the performance and land use implications of the metro-line in Amsterdam before and after its opening. K. Brohm, H. Kleyn, F. Le Clercq. HRIS 12. IRRD 607358. ACTIVE

(20) Periodical Parking Duration Surveys. In random selected street segments, number plates are being observed to obtain an insight into the duration of parking periods of cars. J. van der Kley. HRIS 16. IRRD 607359. ACTIVE

c. Department of Traffic and Transportation: Oudezijds Voorburgwal 782 Amsterdam 1012GL

(1) Danger to Children from Traffic in Amsterdam. Evaluation of measures being taken to improve safety for children from age 4 to 12. F. C. M. Wegman, P. C. Mattie. HRIS 51. IRRD 604085 COMPLETE

(7) Practical Survey on Priority for Public Transport by Means of Selective-Detection System on Several Intersections. Test of a system that will permit buses to have priority at signal controlled intersections. W. Wessels, E. Gouvernew, D. van Bekkum, T. Mulder. HRIS 54. IRRD 604869. (Citations) ACTIVE

New Projects

(9) Traffic Safety Model. To develop a predicting model for traffic safety characteristics for specific road sections within the built-up area. P. Van der Kroon, T. Jongsma, K. Brohm. HRIS 51. IRRD 607360. ACTIVE

(10) Road Humps - Route Choice. To study the effect of the construction of road humps on the route choice of motorized traffic by means of a number plate survey before and after the construction of the humps. P. Van der Kroon. HRIS 52. IRRD 607361. ACTIVE

(11) Road Humps and Emotional Factors in their Acceptance. To obtain an insight into the acceptance of the population regarding the effects of traffic humps by means of an inquiry before and after their construction. P. Van der Kroon. HRIS 54. IRRD 607362. ACTIVE

(12) The Effect of Free Lanes for Public Transport. To evaluate the flow of public transport and traffic safety in an existing free lane project. T. Mulder. HRIS 12. IRRD 607363. ACTIVE

3. DELFT UNIVERSITY OF TECHNOLOGY (Technische Hogeschool Delft): Julianalaan 134, Delft 2208

a. Transportation Research Laboratory, Department of Civil Engineering: 1 Stevinweg 2628 CN, Delft

(9) Direction Changing Flow on Interchanges of Urban Motorways. Empirical study of the behavior of traffic flow, which changes direction from the exit ramp to the connecting road to the entrance ramp, the flow-density relations being analyzed. D. Westland, L. Leeuw. HRIS 55. IRRD 600300. ACTIVE

(13) Characteristics of Uninterrupted and Interrupted Traffic Flow. Measurement of velocities, time of passing, position on roadway, and wheelbase length, to determine elements of traffic flow in relation to volume, composition, characteristics of cross section and profile and trip purpose. J. Volmuller. HRIS 55. IRRD 603423. ACTIVE

(14) Passenger Car Equivalent. Study of the passenger car equivalent of freight transport vehicle in its effect on capacity of level two-lane rural roads. A. Suesser. HRIS 55. IRRD 604747. ACTIVE

New Project

(15) Effect of Slow Moving Vehicles on Travel Times and Safety of Other Traffic on Two-Lane Rural Roads. To develop and validate a microscopic simulation model for traffic flow that describes the behavior of individual vehicles under the influence of a slow moving vehicle on two-lane rural roads. H. Botma. HRIS 55. IRRD 607309. ACTIVE

b. Road and Railroad Research Laboratory, Department of Civil Engineering: 4 Stevinweg, 2628 CN, Delft

(7) Complex E - Modulus for Road Pavement Mixtures. Measurement of a complex modulus with the aid of vibrations generated by an excitator in order to determine the property values of materials in general and of visco-elastic materials in particular. B. T. Han. HRIS 31. IRRD 600302. INACTIVE

(9) Blistering of Bituminous Pavements on Bridges and Viaducts. To determine causes and preventative measures for blistering. G. M. H. Beurs. HRIS 31. IRRD 601214. INACTIVE

(10) Fatigue Behavior of Roadbuilding Materials and Construction Under Repeated Loads. To determine the properties and changes in properties of road building materials subjected to dynamic forces occuring under road conditions, as simulated in the laboratory. B. T. Han, A.A.A. Molenaar. HRIS 62. IRRD 601215. ACTIVE

(12) Fatigue Behavior of Mixtures Tested Under Laboratory Conditions. To study the fatigue behavior of roadbuilding materials under various frequencies, temperatures and types of loads. A. A. A. Molenaar. HRIS 62. IRRD 601217. ACTIVE

(15) Pavement Management. To develop a pavement maintenance management system by which it is possible to determine optimal maintenance activity given pavement condition, traffic, subsoil and available budget. A.A.A. Molenaar. HRIS 40. IRRD 604871 (Citations) ACTIVE

(16) Evenness - Driving Comfort. To measure the evenness of roads with the purpose of determining "driving comfort." A. A. A. Molenaar. HRIS 24. IRRD 606342. ACTIVE

3. b. (17) Compaction of Sandfills. To develop and evaluate a rapid test for the control of field-compaction and bearing capacity of sand fills. H. J. T. Span, J. F. Jonker. HRIS 62. IRRD 606343. ACTIVE

(18) Visual Inspection of Roads. To record methodically the damage to a road structure with the purpose of determining the correct moment of maintenance. A. A. A. Molenaar. HRIS 40. IRRD 606344. ACTIVE

c. Vehicle Research Laboratory, Department of Mechanical Engineering: Mekelweg 2600 GA, Delft

(11) Influence of Tire and Road Factors on the Coefficient of Friction on Wet Roads. Use of measuring trailers to determine the skid resistance of tires on wet roads, together with construction of special road surface to investigate the influence of road surface parameters. H. C. A. van Eldik Thieme, A. Dijks. HRIS 24. IRRD 603428. COMPLETE

(12) Tire Friction with Special Reference to the Friction of Rubber Compounds. Determination of friction behavior of different rubber compounds for different speeds, surface pressures and temperatures on variously hard solids, with correlation between theoretical and experimental results. A. R. Savkoor. HRIS 24. IRRD 603429. ACTIVE

(13) Motion of Motorcycles Disturbed by Road Surface Irregularities. Study of the effects of such irregularities as grooves, bumps, markers, surface types on controllability and stability of motorcycles. H. B. Pacejka, J. A. Zwaan, D. A. Timan, C. Koenen. HRIS 53. IRRD 604750. (Citations) ACTIVE

(14) Braking Force Coefficients Caused by the Use of Retarders in Commercial Vehicles. To find the limitations for usage of retarders with respect to the risk of skidding and jack-knifing of commercial vehicles. A. Dijks, H. Ouwerkerk. HRIS 53. IRRD 606255. ACTIVE

New Projects

(15) Handling and Stability of Automobiles. To determine a full understanding of the motions of automobile at relatively large lateral accelerations. H. B. Pacejka, W. A. Koumans. HRIS 53. IRRD 607367. ACTIVE

(16) Road Bumps for Traffic Speed Control. To develop an optimal shape of the profile of a road bump meeting the requirement of a minimum degree of discomfort at speeds below 30 km/h but rising rapidly for higher speeds. D. Ryba, H. B. Pacejka. HRIS 54. IRRD 607368. ACTIVE

d. Laboratory for Automatic Traffic Systems, Department of Electrical Engineering: 4 Mekelweg, 2628 CD, Delft

(10) Computer Control of Intersections. Study of the various strategies for computer control of intersections in order to develop improved methods and testing of these control methods by means of simulation, with special attention being paid to public transportation vehicles. J. J. Reijmers. HRIS 54. IRRD 603418. ACTIVE

(11) Traffic Behavior on Motorways. Use of inductive-loop detectors in investigations of traffic behavior with processing by an IBM computer, the aim being to develop a computer controlled system to secure traffic against collision and provide driver information about alternative routes. J. J. Reijmers, J. J. Klijnhout. HRIS 54. IRRD 603419. (Citations) ACTIVE

3. d. (12) Public Transportation Systems--the "Bustaxi." Development of a computer controlled demand actuated public transportation system (the "Bustaxi") offering door-to-door and bus stop-to-bus stop service, a mini-processor being used to allot incoming demands to the buses in such a way that an arbitrary disutility function is minimized. M. W. K. A. Breur, W. E. Hendrikse. HRIS 16. IRRD 603420. (Citations) ACTIVE

(14) Centralized Control of Tramway Traffic. An investigation of methods to improve regularity of tramway traffic. M. W. K. A. Breur, D. L. van Milligen, J. G. W. Stikkelman. HRIS 54. IRRD 604749. ACTIVE

e. Institute for Town Planning Research (I.S.O.): 1 Berlageweg, 2600 GA, Delft

(8) Spatial Shopping Behavior and Modal Choice. J. T. Gantvoort. HRIS 12. IRRD 601226. (Citations) COMPLETE

(9) Spatial Aggregation in Transportation Planning. An investigation into the effects of the various forms of spatial abstraction in transportation system analysis on the quality of predictions of the consequences of transportation plans. P. H. L. Bovy, G. R. M. Jansen. HRIS 12. IRRD 601227. (Citations) ACTIVE

(10) Traffic Noise Propagation. Investigation on a model scale of traffic noise propagation in urban environments. L. Nijs. HRIS 17. IRRD 603389. (Citations) ACTIVE

(12) Sampling Problems with Origin-Destination Surveys via Household Interviews. A study of the problems involved in using a sampling method of making household interviews so as to be sure that results are truly representative. P.H.L. Bovy. HRIS 55. IRRD 604757. (Citations) INACTIVE

(13) Development of a Travel Time Model for Urban Areas. A theoretical approach to the development of a model that relates travel time to the characteristics of traffic flow, the parameters of the road network and the environment. P. H. L. Bovy, G. R. M. Jansen. HRIS 55. IRRD 604756. (Citations) ACTIVE

(14) Route Choice Behavior in Transport Networks: Empirical Surveys. To study the alternatives considered by journeymakers and if the choice is influenced by traffic or parking congestion. P. H. L. Bovy, G.R.M. Jansen. HRIS 55. IRRD 605628. ACTIVE

(15) A Literature Survey into the Dose Effect Relation of Traffic Noise with Regard to Human Reactions. Attention will be given to scientific and legal limits with respect to noise pollution. P. van der Laaken. HRIS 17. IRRD 603256. (Citations) COMPLETE

New Project

(16) Effects of Parking Restriction in City Centres. To investigate the effects of parking restriction in city centers on the parking system itself and on the transport system. J. Gantvoort. HRIS 12. IRRD 607257. ACTIVE

4. TECHNICAL UNIVERSITY OF EINDHOVEN (Eindhoven Technische Hogeschool): 2 Insulindelaan, 5612 AZ, Eindhoven

a. Department of Electrical Engineering: Same address.

(2) Traffic Simulation. To study the effect of several control strategies on traffic networks, with a computer simulated model. M. P. J. Stevens, J. P. Kemper. HRIS 54. IRRD 602799. (Citations) INACTIVE

4. a. (3) Universal Traffic Controller Based on Microprocessors. Development of an easily expandable traffic controller system using microprocessors. M. P. J. Stevens, J. P. Kemper, J. G. H. Alma. HRIS 54. IRRD 602800. (Citations) INACTIVE

(4) Traffic Assignment. A study of the influence of changes in the existing network on traffic intensities, using a mathematical model. M. P. J. Stevens, J. P. Kemper, T. J. Straver. HRIS 55. IRRD 602801. INACTIVE

(5) Computer Control of Traffic Systems. Development of a traffic control system based on microprocessors, which distributes the intelligence on the entire traffic network, in attempts to learn more about the influence of, and the necessity for, computers in traffic signalization, with a special study on the computer size and type to be used. A. Heetman, M. P. J. Stevens, J.P. Kemper. HRIS 54. IRRD 603391. INACTIVE

(6) Generation of Time Settings for Traffic Controllers. Generation of traffic control systems by permutations in a sequence of phases from which optimal-time-setting can be chosen, starting with geometry of junctions, traffic intensities, conflicts and waves. T. J. Straver. HRIS 54. IRRD 604872. COMPLETE

b. Physics Workshop: 2 Den Dolech, 5600 MB Eindhoven

(1) The Risk for Pedestrians Crossing the Road. A study of traffic intensities, average velocity, road width, space between parked cars, in order to calculate risks for pedestrian crossings. A. F. M. Snik, C.H. Massen. HRIS 51. IRRD 606257. (Citations) ACTIVE

5. INSTITUTE FOR ROAD SAFETY RESEARCH SWOV (Stichting Wetenschappelijk Onderzoek Verkeersveiligheid SWOV): P. O. Box 71, 2270 AB, Voorburg

(30) Policy Analysis in the Field of Traffic and Safety. To develop a model in the cost/benefit area for determination of priorities. F. C. Flury. HRIS 51. IRRD 602514. ACTIVE

(31) Traffic Safety at Dusk and at Night. In order to obtain better insight into the quantitative effects of lighting systems upon traffic safety at dusk and at night, the following aspects are under consideration: Optimal vehicle lighting in the presence of public lighting in urban areas; criteria for the presence and quality of public lighting in rural areas; reflective properties of road surfaces; polarized headlights; and functional requirements for vehicle signals. D. A. Schreuder. HRIS 51. IRRD 603392. (Citations) COMPLETE

(33) Tires, Road Surface and Skidding Accidents. Research into the extent of the phenomenon of skidding and the factors which influence its occurrence, which indicate that measures need to be developed for improving the road surface as well as vehicle conditions which influence skidding. R. Roszbach, P. M. W. Elsenaar, A. Dijks. HRIS 24. IRRD 603394. (Citations) ACTIVE

(35) Wind Hindrance by Road Vehicles. The aims of the research are to investigate if the influence of wind or air shift on lateral movements of road vehicles could under certain circumstances lead to unacceptable risks and if this is the case which measures could be taken with respect to the road, the road environment the controlled vehicle, and the vehicle which originates the air shift in order to avoid or diminish such an impact. P. I. J. Wouters, P. Lemaire, G. K. Tanis. HRIS 53. IRRD 603396. (Citations) ACTIVE

5. (36) Road Classification. Classification of the road network into a limited number of easily recognized categories, based on the traffic functions of the road determined by road, traffic and vehicle characteristics. S. T. M. C. Janssen. HRIS 11. IRRD 603397. (Citations) COMPLETE

(37) Traffic Flow Through Arterials. Study of traffic flow models for traffic in arteries, the objective being the determination of their relevance for indication, design and evaluation of measures influencing the traffic quality. R. Roszbach. HRIS 55. IRRD 603438. (Citations) ACTIVE

(38) Obstacles Along the Road. An investigation of the danger to road traffic of obstacles along the road and into ways of decreasing their impact, together with research into the danger to vehicles leaving their normal route. A. Edelman, C. C. Schoon. HRIS 51. IRRD 603439. (Citations) COMPLETE

(39) SWOV-Accident Investigation. An analysis of 2,200 car/driver cases in a statistical crash study of relations between occupant data, injury data, damaged data and car. A. Edelman, L.T.B. van Kampen. HRIS 51. IRRD 603440. COMPLETE

(40) Analysis of the Driving Task. Investigations regarding the problems involved and development of instrumentation for indicating the manner in which a driver visually guides his vehicle along the road; together with his perception of other vehicles with recommendations for improvement of indicator lights, a review of route information required and the means of supplying this information. D. A. Schreuder, J. Moraal, H. van der Colk. HRIS 52. IRRD 603441. (Citations) ACTIVE

(41) Medical Records. A survey on the utility of hospital records for obtaining reliable data on medical deficiencies of hospitalized collision victims and the presence of alcohol and carbon monoxide in their blood. A. Blokpoel. HRIS 51. IRRD 603442. (Citations) INACTIVE

(42) Roadside Safety Structures. Use of mathematical simulations in an evaluation of the effectiveness of various types of safety fences, together with tests of official specifications for roadside safety structures in real situations to see if modifications are necessary. A. Edelman, W. H. M. Van de Pol. HRIS 51. IRRD 603443. (Citations) INACTIVE

(43) Breath Analysis Methods and Devices. An examination of breath analyzers together with a review of literature and manufacturers specifications are used in a selection of analyzers which have been tested in the laboratory and in the field with a roadside survey. P. C. Noordzij, J. A. G. Mulder. HRIS 51. IRRD 603444. (Citations) COMPLETE

(44) Drinking and Driving in the Netherlands. Extensive national roadside surveys (1970-73) prior to the introduction of an amendment (1974) to the traffic regulations limiting the blood alcohol of 0.5%, followed by a 1975 survey to determine the effect of the law. P. C. Noordzij. HRIS 51. IRRD 603445. (Citations) COMPLETE

(45) Integrated Road Accident Recording. Following a study of the position of road accident recording in The Netherlands, a Basic Recording System (VOR), which combines a number of subsystems, has been developed with recommendations for putting it into practice. J. C. A. Carlquist, A. Blokpoel. HRIS 51. IRRD 603446. (Citations) COMPLETE

(46) Evaluation of a Publicity Campaign on Helmets for Moped Riders. Evaluate the results of the campaign to promote usage prior to introduction of legislation making it compulsory to wear helmets. P. C. Noordzij. HRIS 51. IRRD 604038. (Citations) ACTIVE

5. (47) SWOV Accident Study. Follow-up to earlier studies and to evaluate effectiveness of energy absorbing structures of cars, child safety devices and automatic seat belts. A. Edelman, L. T. B. van Kampen. HRIS 51. IRRD 604039. (Citations) ACTIVE

(48) Biomechanical Research. Investigation of human tolerances and resistance of the body to forces and accelerations occurring in accidents. A. Edleman. T. Heijer. HRIS 51. IRRD 604040. ACTIVE

(49) Mathematical Models of Vehicle Exterior and Vehicle Environment. Use of mathematical models for computer simulation of collisions and their effects. A. Edelman, W.H.M. van de Pol, V. Giavotto. HRIS 51. IRRD 604041. ACTIVE

(50) Viaduct Safety Constructions for Trucks. To develop effective safety structures to prevent heavy trucks from falling off a viaduct. A. Edleman, W.H.M. van de Pol, V. Giavotto. HRIS 25. IRRD 604042. COMPLETE

(51) Demonstration Project Urban Re-division. Study of traffic circulation, environmental problems such as air pollution and noise, use and experience of public spaces, socio-economic aspects as related to road safety. J. H. Kraay. HRIS 90. IRRD 605629. (Citations) ACTIVE

(52) Analysis of the Unsafe Characteristics of Freight Vehicles. To describe the unsafe characteristics of these vehicles against an economic and social background. R. Roszbach. HRIS 53. IRRD 606258. ACTIVE

(53) Post Crash Research. To obtain an insight into the different aspects of the post crash phase of traffic accidents, by means of a qualitative and quantitative description. A. Edelman, R. J. E. O. van der Veen. HRIS 51. IRRD 606259. ACTIVE

(54) Non-response in the Dutch National Travel Survey. An interview of persons who failed to respond to travel surveys to determine if the group has a different travel pattern than the responding group, so that the results of travel surveys could be weighted for non-response. F. J. de Bruin, S. Harris. HRIS 55. IRRD 606345. (Citations) ACTIVE

(55) Estimating Trip Distances in the Dutch National Travel Survey. To determine how many trips respondents forgot to enter in their travel diaries and to what extent respondents had correctly estimated the distance of those trips made. F. J. de Bruin, S. Harris. HRIS 55. IRRD 606346. (Citations) ACTIVE

New Projects

(56) Safety Criteria for Traffic Provisions. To give advice regarding a redivision and reconstruction of the Dutch road network as an application of a system of measures mainly in the field of traffic engineering for the improvement of traffic safety. S. Janssen. HRIS 21. IRRD 607028. ACTIVE

(57) Development and Calibration of Breath Testers for Research and Enforcement. To conduct laboratory experiments on some aspects of breath testing such as sample taking, temperature, moisture content, which are related to accuracy and to develop new equipment which can be used for research and enforcement. J. Mulder. HRIS 52. IRRD 607029. ACTIVE

(58) Permanent Results of Car Accident Injuries. To determine the permanent results of car accident injuries and cross reference these data with other additional accident data. A. Edelman, L. Van Kampen. HRIS 51. IRRD 607308. (Citations) ACTIVE

(59) Information Systems in Road Traffic. An overview of the developments and applications of information systems in road traffic and their influence on traffic safety. H. Oei. HRIS 54. IRRD 607336. ACTIVE

New Projects

5. (60) SWOV-Accident Study II. To study the factors which influence the severity of accident injuries sustained by pedestrians, cyclists, moped-riders and motorcyclists in order to include them in the safety program. A. Edelman, J. Huybers. HRIS 51. IRRD 607337. ACTIVE

(61) Permanent Results of Accident Injuries Sustained by Pedestrians, Cyclists, Moped-Riders and Motorcyclists. To determine the permanent results of injuries to pedestrians, cyclists, moped-riders and motorcyclists and cross reference these data with other additional accident data. A. Edelman, J. Huybers. HRIS 51. IRRD 607338. ACTIVE

(62) The Furnishing of the Highway Shoulder Regarding Crash-Provisions. To develop equipment for the highway shoulder to decrease the risk to road users who run off the traffic lane. C. Schoon, A. Edelman. HRIS 54. IRRD 607339. ACTIVE

(63) Light and Sight. To study and correlate the interaction of visual perception of objects which are relevant for traffic and the role lighting plays in different aspects of sight in traffic. D. Schreuder. HRIS 52. IRRD 607357. ACTIVE

6. RESEARCH INSTITUTE FOR ROAD VEHICLES, TNO (Instituut voor Wegtransportmiddelen, TNO): 97 Schoemakerstraat, 2628 VK, Delft

(2) Handling and Stability of Motor Vehicles. Various studies related to vehicle dynamics and road holding ability of vehicles, including crosswind sensitivity and studies of various systems for measuring vehicle motions during handling tests. G. K. Tanis, S. Mooyman, J. Moraal. HRIS 53. IRRD 601209. ACTIVE

(6) Exhaust Emissions and Optimization of Small Two-stroke Motorcycle Engines. Measurements of standard engines, improvements in carburation, scavenging and cylinder lubrication. G. L. van Wechem, R. C. Rijkeboer, J. van Ling. HRIS 53. IRRD 602737. ACTIVE

(7) Gaseous Fuels Such as LPG and LNG for Operation in Spark Ignition Engines. Development and optimization of equipment for vehicles to obtain good performance with low exhaust emissions. J. van der Weide, J. van Ling, M.W.A. Ramackers. HRIS 53. IRRD 602736. ACTIVE

(11) Liquified Petroleum Gas-Fueled Commercial Vehicles. To redesign diesel engines for buses and trucks for use with standard liquified petroleum gas, in order to use an alternative fuel and have less noise and pollution. J. van der Weide, G. L. van Wechem, R. C. Rijkeboer. HRIS 53. IRRD 603098. ACTIVE

(12) Injury Prevention and Protection of Children. Study of restraint systems and related testing of anthropomorphics for a family of child dummies for crash testing. J. C. Bastiaanse, J. Maltha, R. L. Stalnaker, C. Oudesluys. HRIS 51. IRRD 604373. ACTIVE

(13) Shifting Cargo on Lorries. Investigation of the acceleration patterns in different maneuvers under different road surface conditions and development of a lorry simulator. G. K. Tanis, J. P. M. Driever. HRIS 53. IRRD 605630. ACTIVE

(14) Safety of Car-Caravan Combination. Study of driving properties of the combinations under different loading conditions, and development of testing methods and computer simulations. G. K. Tanis, J.P. M. Driever, R.E. Schuurman. HRIS 53. IRRD 606347. ACTIVE

6. (15) Accident Reconstruction with Mathematical Occupant Models. Application of simulation program and establishing injury criteria for crash victims. J. Wismans, R. Stalnaker, J. Maltha, L. Wittebrood. HRIS 51. IRRD 606348. ACTIVE

(16) Mathematical Modeling of Crash Victims. Development of a three-dimensional modulus program package for simulations of dynamic behavior of one or more tree-structure linked rigid bodies. J. Maltha, J. Wismans, L. Wittenrood. HRIS 51. IRRD 606349. ACTIVE

New Projects

(17) Roof Racks. To test roof luggage racks, including roof racks used for bicycles and skis with the objective of reaching international standardization. J. Bastiaanse. HRIS 53. IRRD 607355. ACTIVE

(18) Development of an Anthropometric Crash Dummy for International Use and Standards. To develop the thorax and abdomen using the part 572 test dummy as a base which can be used for lateral as well as frontal impacts. R. Stalnaker, J. Bastiaanse. HRIS 51. IRRD 607356. ACTIVE

8. MUNICIPALITY OF DELFT: 87 Markt, 2611 GS, Delft

b. Public Works, Department of Traffic: 53 Oude, Delft, 2611 BC, Delft

(2) Evaluation Study: Residents' Parking. A study of a system whereby residents living near a new shopping center are issued permits for unrestricted parking on the residential streets during the day and when stores are open at night. A. D. Pettinga, C. Kok. HRIS 54. IRRD 605631. COMPLETE

(3) Evaluation Study of the Traffic Circulation Plan in the Center of Delft. To measure and analyze the effects on the town center (socio-economic, safety, traffic environment) and the changed traffic patterns resulting from a plan to curtail through traffic in the center. D. H. Ten Grotenhuis, J. P. Molenaar, A. Pettinga, A. van Winden, R. J. M. Commandeur. HRIS 54. IRRD 605632. (Citations) COMPLETE

(4) Traffic Safety in the Neighborhood of Schools. A study of the routes followed and methods of travel for school children in order to determine safety characteristics. A. van Winden. HRIS 51. IRRD 606187. (Citations) ACTIVE

15. STATE UNIVERSITY OF GRONINGEN (Rijksuniversiteit Groningen): 30 Kerklaan, P. O. Box 14, 9750 AA, Haren (GR)

a. Traffic Research Center (Verkeerskundig Studiecentrum): Same address.

(3) Child Traffic Education Based on Behavior Analysis and Cognitive Development. Experiments and literature studies concerning cognitive development, task analysis, the observation of behavior and teaching methods, taking into account several theories of human learning. Evaluation methods will be developed concerning teaching effects on cognitive functioning, knowledge of traffic and traffic behavior. H. H. van der Molen, J. A. Rothengutter, M. P. Vinje. HRIS 51. IRRD 603427. ACTIVE

(5) Comparative Research on the Quality of Public Regional Transport Companies in the Netherlands. Comparison of transport performance, frequency, accuracy and relation of duration of the bus-trip and the same trip by car, and supply of information, comfort, safety, etc. H. van der Colk. HRIS 15. IRRD 604748. (Citations) COMPLETE

15. a. (6) Survey on Traffic Education in Schools. Study of methods, frequency, materials, requirements, and possibilities of traffic safety education in the schools. A. Welvaart. HRIS 51. IRRD 606188. ACTIVE

New Project

(7) Behavioral Analysis of Mobility. To make available to planning authorities a number of behavioral instruments that will aid the development of measures for improving mobility in modern society. J. Michon. C. Van Knippenberg. HRIS 16. IRRD 607369. ACTIVE

16. CENTRAL BUREAU OF STATISTICS, DEPARTMENT OF TRANSPORT STATISTICS (Centraal Bureau voor de Statistiek, Hoofdafdeling Verkeer en Vervoer): 1 Kloosterweg, 6401 CZ, Heerlen

(1) National Travel Survey. To conduct a travel survey based on records kept by respondents in some 1300 households, which note numbers distances, purpose, destinations and mode of travel. F. W. M. Hendrikx, M. J. G. Widdershoven. HRIS 55. IRRD 606350. (Citations) ACTIVE

NEW ZEALAND

Supplementary Survey 1980

F.A. Langbein

The 1980 survey of New Zealand was reported by Mr. F.A. Langbein, Director of Roading, National Roads Board. The report lists 82 projects. Thirteen projects are shown to be complete

1. MINISTRY OF WORKS AND DEVELOPMENT: P. O. Box 12-041, Wellington North

b. Central Laboratories: P. O. Box 30845, Lower Hutt.

(33) General Scour at a Contraction. A follow on investigation to investigate general scour at a waterway contraction and develop more reliable design predictions. E. M. Valentine. HRIS 22. ACTIVE

(34) Creep and Shrinkage Analysis. Further study of the creep and shrinkage strain data of an existing box girder bridge and comparison of the results with existing theory. J. H. Wood. HRIS 25. (Citations) ACTIVE

(35) Bridge Impact Factors. Measurement of impact factors for various vehicles for a number of bridges. S. J. Thurston. HRIS 25. ACTIVE

(36) Proof Loading of Highway Bridges. Verification, including destruction of two disused bridges, of a technique for checking suspect highway bridges by incrementally overloading 20% above maximum allowable traffic loads. S.J. Thurston. HRIS 25. ACTIVE

(37) Thermal Measurements in Bridges. To record extreme temperature gradients in two recently constructed NZ bridges and to compare with theoretical models. J.H. Wood. HRIS 25. (Citations) ACTIVE

(38) Filter Fabrics for Use in Roads. To verify previous tests for clogging and to indicate the preferred fitter-type optimum thickness and pore size for different soils. P. Millar, H.R. Turnbull. HRIS 34. ACTIVE

(39) Swelling Effects in Soft Rocks. Follow on studies to investigate the swelling characteristics of various New Zealand mudstone types with regard to slabbing failures on cut slopes. P. Millar, B.W. Riddols, S. Read. HRIS 61 (Citations) ACTIVE

(40) Testing of Scale Model Foundation Cylinders. Static and cyclic dynamic lateral loading tests on scale model reinforced concrete foundation cylinders instrumented with strain gauges and soil pressure transducers. F. D. Edmonds, S.J. Thurston, J.H. Wood. HRIS 62. ACTIVE

c. District Testing Laboratory: P.O. Box 5040, Auckland

(10) Underwater Concreting of Small Diameter Piles. To study methods of placing concrete through water in the base of small diameter piles and to develop guidelines and practical specifications. B. M. Hosie, S. M. Jackson. HRIS 33. ACTIVE

f. District Office, MWD: Hamilton

(5) Detailed Monitoring of Pavement Performance of In Service Pavements: Rerewhakaaitu Test Strip Evaluation. To evaluate the relationship between cement content, pavement thickness and pavement performance on five pumice and greywacke base course test sections laid in 1964. P.J. Wilcox. HRIS 24. ACTIVE

(6) Comparison of Base Course Materials Ngongotaha Test Strips: Rotorua. Evaluation of the performance of three pavement test sections of soft rhyolite and andesite laid in 1967. P.J. Wilcox. HRIS 35. ACTIVE

1. f. (7) Comparison of Base Course Materials: Whitehall Test Strip Evaluation. Evaluation of current design methods by field performance tests on three pavements laid in 1968 using greywacke aggregates. P. J. Wilcox. HRIS 35. ACTIVE

(8) Comparison of Base Course Materials: Okere Falls Rotorua. To evaluate the suitability of four aggregates not meeting existing specifications for future use in road pavements. P. J. Wilcox. HRIS 35. ACTIVE

j. Science Centre: P. O. Box 1479, Christchurch

(1) Field Measurement of Scour Depth. To use outflow channel from a power station to study bridge pier scour induced by non-steady flow. S.M. Thompson. HRIS 22. ACTIVE

(2) Bridge Scour Measurement. To obtain scour depths using a newly developed device and relating data to flood hydraulic parameters and bedsize material and distribution. G. A. Griffiths. HRIS 22. ACTIVE

k. Civil Division: P. O. Box 12041, Wellington

(1) Preparation of Guidelines for Seismic Design of Bridges. To make recommendations and do any further research work needed to acquaint practicing bridge engineers with seismic design of bridges. J. F. McGuire. HRIS 25. ACTIVE

l. District Office, MWD: Auckland

(1) Motorway Ramp Metering. To investigate feasibility of ramp metering trials with and without priority access for high occupancy vehicles at three interchanges. M. White. HRIS 55. ACTIVE

2. UNIVERSITY OF AUCKLAND: Private Bag, Auckland.

a. Civil Engineering Department: Same address

(53) Testing of Multiple Plug Lead/Rubber Bearing. To test elastomeric bridge bearings having several lead plugs instead of the usual single plug used for earthquake energy dissipation. I. G. Buckle. HRIS 25. ACTIVE

(54) Computer Studies in Highway Bridge Behavior. To provide a summary of computer programs available in New Zealand for highway bridge analysis. I. G. Buckle. HRIS 25. ACTIVE

(55) Approximate Analysis of a Curved Box Girder Bridge. To develop a 16 degree of freedom equivalent beam model for the approximate analysis of curved box girder bridge superstructures. I. G. Buckle. C. C. Chong. HRIS 25. ACTIVE

(56) Thermal Behavior of Box Girder Bridges with and without Black Top. Results to be analyzed of thermal behavior of box girder bridge from completion of construction until after placement of black top. I. G. Buckle. A. H. Bryant HRIS 25. ACTIVE

(57) Summary Volume on Multibeam Bridges. To combine the findings of work done on skewed continuous multibeam bridges with more recent research efforts to prepare a design manual for multibeam bridges. I. G. Buckle. HRIS 25. ACTIVE

(58) Analysis of a Curved Box Girder Bridge (B). To provide a summary of beam on elastic foundation analysis for straight and curved box girder bridges. B. C. Ng, R.C. Fenwick, I. G. Buckle. HRIS 25. (Citations) COMPLETE

2. a. (59) Effect of Mix Design on Creep and Shrinkage. To investigate the effect of different aggregates and mix design on the long term creep and shrinkage of concrete. A. H. Bryant. P. Collister. HRIS 32. ACTIVE

(60) Administrative Aspects of Construction Failures. To make a pilot study of all published literature on construction failures to determine if research is needed on administrative causes of the failures. B. H. Cato. HRIS 33. ACTIVE

(61) Pedestrian Crossing Facilities. Demonstration project for identifying unsatisfactory aspects of existing crossings and proposals for improvements. R. C. M. Dunn. HRIS 51. ACTIVE

(62) Saturation Flows at Traffic Signals. Field measurements during peak flows at signal controlled intersections for comparison with present calculation methods. C.H. Sia HRIS 55. ACTIVE

(63) Development of Self-Boring Permeability Meter. To develop and gain experience with a self-boring instrument for the in-situ measurement of soil permeability. A. M. Welham. M. J. Pender. HRIS 61. ACTIVE

(64) Dilatancy Effects in Closely Jointed Rocks. To investigate dilatancy and its effect on excavating a slope or boring a tunnel in closely jointed rock masses. M. J. Pender. HRIS 63. ACTIVE

d. Department of Geology: Same address.

(6) Stabilization Mechanisms. Investigations to determine most appropriate local practices when additives are used to stabilize various base and subbase materials. T. Sameshima. HRIS 62. ACTIVE

h. Department of Psychology: Same address.

(1) Driver Visual Performance. This study will investigate drivers having night visibility problems due to ocular abnormalities. make recommendations for any changes needed in the driving environment and investigate relevance of existing standards. L. Garner. HRIS 52. ACTIVE

3. UNIVERSITY OF CANTERBURY: Private Bag. Christchurch

a. Civil Engineering Department: Same address.

(56) Economies of Bridge Waterways. To review present waterway design practice for bridges in an economic framework. W.R. Sissons. D. Scott. A.J. Sutherland. HRIS 22. ACTIVE

(57) Summary Paper - Unsteady Scour/Grading and Layering Effects. To summarize current research concerning scouring caused by passage of a flood wave and the effect of grading and layering of bed material on scour depth. A. J. Sutherland. A. J. Raudkivi. HRIS 22. ACTIVE

(58) Ductility of Circular Bridge Piers. Investigation of the ductility capacity of reinforced concrete bridge piers of slender aspect ratio in accordance with New Zealand concrete code. M.J.N. Priestley. HRIS 25. ACTIVE

(59) Ductility of Hollow Bridge Piers. Investigation of the ductility requirements and capabilities of hollow reinforced concrete bridge piers subjected to seismic loading with particular attention to testing of large elements. M.J.N. Priestley. HRIS 25. ACTIVE

(60) Unbonded Prestressing Tendons in Slabs. To investigate the ultimate strength of slabs with unbonded tendons. N. Cooke. P. Yong Min Fui. HRIS 25. ACTIVE

3. a. (61) Ductility of Circular Reinforced Concrete Piers. Large circular bridge piers were investigated under combined axial load and bending moment with the principal variable being the amount of spiral steel reinforcement. R. Potangaroa, M.J.N. Priestley, R. Park. HRIS 25. (Citations) COMPLETE

(62) Response of Bridges to Strong Ground Shaking. Accelerographs have been installed near Kaikoura as part of a nationwide accelerograph program. J.B. Berrill. HRIS 25. ACTIVE

(63) Partially Prestressed Beams Under Repeated Loading. To study crack development of partially prestressed concrete beams under repeated bending and shear loading. J.A. Dean. HRIS 25. ACTIVE

(64) Design Charts for Concrete Walls and Slabs. To prepare design charts for reinforced concrete walls and slabs based on an existing draft concrete code. J. A. Dean. HRIS 25. ACTIVE

(65) Corrosion in Partially Prestressed Beams. To investigate the effect of concrete porosity and load cracking on the corrosion of prestressing strands. J.A. Dean. HRIS 25. ACTIVE

(66) Seismic Response of Bridge Columns. Establish the stress/strain characteristics of confined rectangular bridge columns for analysis of ductility capacity and response on spread footings. M.J.N. Priestley. B.D. Scott. K.J. McManus HRIS 25. ACTIVE

(67) Examination of the Elastic Properties of Materials Comprising Flexible Pavements. Laboratory studies aggregate elastic properties for design calculations and comparison with test track data. C.N. McKenzie. HRIS 31. ACTIVE

(68) Epoxy Resin Materials. Studies for use as mortar/adhesive in precast concrete segmental construction and bedding for bridge bearings. G.C. Clifton. P.J. Moss. HRIS 34. (Citations) COMPLETE

d. Department of Chemical Engineering: Same address.

(1) Moisture Movement Through Pavement Surfaces. Studies made on several surfaces have indicated a wide variation in permeabilities to the chip seal and a mechanism is being proposed for transport of water through the paving. A.G. Williamson. HRIS 24. ACTIVE

4. MINISTRY OF TRANSPORT: Private Bag, Wellington

a. Traffic and Safety Division: Same address.

(72) Seat Belt Wearing. Surveys are made to assess the effects of laws and publicity campaigns on seat belt use and whether they are worn properly. K.C. Torrington. HRIS 51. ACTIVE

(73) Critical Accident Rates, An Application for State Highways. Development of a computer analysis of accident rates to determine critical highway sections is compared to conventional means and the computer system is being perfected. R. A. Gibson, N.A. Hendy, G.H. Holland. HRIS 51. (Citations) ACTIVE

(74) Ministry of Transport Alcohol Blitz. Two intensive enforcement campaigns against alcohol impaired driving undertaken in 1978-79 are being thoroughly assessed using every readily available data connected with this problem. P. M. Hurst, P.G. Wright. HRIS 52. (Citations) COMPLETE

(75) Investigation of the Effects of the New Zealand 80 Km/Hr Speed Limit. This study confirmed experience elsewhere that mandatory reductions of pre-1973 highway speeds have significantly reduced road injuries. W. J. Frith. HRIS 54. (Citations) COMPLETE

4. a. (76) A Study of Off-Peak Delays and Stops at a Sample of Signalized Intersections. This study is to determine if off-peak delays and stops are significant enough to werrant changes in signalization at certain intersections. W. J. Frith, R. Gibson. HRIS 54. ACTIVE

(77) A Study of Safety of T. Intersections. A study of the effect of signalizing a large sample of T intersections and whether this may in fact reduce safety. W. J. Frith. HRIS 54. ACTIVE

c. Ministry of Transport, Christchurch Regional Office: Private Bag, Christchurch

(1) Effectiveness of Proposed Design Standards and Signs for Cycle Facilities. Evaluation of proposed cycleway design features including signs and markings on a two mile cycleway. R. A. Gibson. HRIS 21. (Citations) COMPLETE

5. DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH: Private Bag, Lower Hutt.

e. Physics and Engineering Laboratory, DSIR, Private Bag, Lower Hutt.

(1) Bridge Accelerograph Installation. The instrumentation by accelerographs of an overpass in Wellington. R.G. Tyler. HRIS 25. ACTIVE

7. VICTORIA UNIVERSITY OF WELLINGTON: Private Bag, Wellington.

b. Psychology Department: Same address.

(3) Simulation of a Drivers Visual Environment. A review of overseas research and developments in driver simulation for future New Zealand use. A. R. Forbes. HRIS 52. ACTIVE

11. TONKIN AND TAYLOR, CONSULTING ENGINEERS: P. O. Box 5271, Auckland

(9) Review of Aggregate Research. A research review to determine the characteristics of New Zealand aggregate emphasizing stability and failure mechanism. F. G. Bartley. HRIS 35. (Citations) COMPLETE

13. CHRISTCHURCH CITY COUNCIL: P.O. Box 237, Christchurch

(3) Christchurch Stock Movement Study. To develop methodology for predicting locational and transport factors in the movement of meat products. B. Hasell. HRIS 16. ACTIVE

(4) Study of the Effect on the Christchurch Southern Motorway. Measure traffic and environmental conditions before opening motorway to assess effects of the motorway. B. Hasell, D. Scott. HRIS 17. ACTIVE

(5) Development of Improved Area Traffic Control Plans. To develop and assess new traffic signal settings for local system using a traffic simulator and field evaluation. B. Hasell, M. Gadd. HRIS 54. ACTIVE

14. BRICKELL MOSS RANKINE AND HILL: P. O. Box 33, 336, Takapuna.

(2) Left Turn on Red. A review of practices elsewhere (right turn on red) for possible use locally. F.S. Green. HRIS 54. (Citations) COMPLETE

17. BECA, CARTER, HOLLINGS AND FERNER: P. O. Box 6345, Auckland

(20) Priority Measures for Public Transport. Assess the value of bus priority and preferential treatment in Takapuna traffic situations. J. Burgess. HRIS 12. ACTIVE

NEW ZEALAND (contd)

17. (21) Vehicle Intensive Commercial Land Uses. To report on the studies of the trip generation characteristics of vehicle-intensive commercial land uses. J. Burgess. HRIS 13. ACTIVE

(22) Shear Design for Concrete Bridge. Investigate use of compression field theory as alternate to NZ Code for shear design of long span superstructures. P. King, D. Goss, L.G. Cormak. HRIS 25. ACTIVE

18. MURRAY-NORTH PARTNERS: P. O. Box 821, Auckland

(10) Setting of Traffic Signal Controllers. To measure signalized intersection performance and prepare guidelines. G. Tuohey. HRIS. 54. ACTIVE

21. W.D. SCOTT AND COMPANY: P.O. Box 3348, Wellington

(3) Urban Maintenance: What Are the Problems? Pilot study of problems associated with the maintenance of urban roads. D.R. Edwards. HRIS 40. ACTIVE

(4) Rural Road Maintenance: What are the Problems? To identify current Rural Roading maintenance problems and propose needed research. D.R. Edwards. HRIS 40. (Citations) COMPLETE

23. BABBAGE AND PARTNERS: P. O. Box 2027, Auckland

(4) Parameter Study for Bridge Impact Factors. Analysis of typical bridge structures to assess impact effects for various vehicle types, speeds and approach roughnesses. P. Rambhai, D. R. Edwards. HRIS 25. (Citations) COMPLETE

24. KINGSTON, REYNOLDS, THORN AND ALLARDICE; P. O. Box 5348, Auckland

(3) Impact of Traffic on Residential Streets. To identify the relationship between traffic flows and their effect on residential streets. E. Henderson. HRIS 17. ACTIVE

26. UNIVERSITY OF WAIKATO: Private Bag, Hamilton

(2) Relationship Between Accident Type and Injury. Accident reports giving certain road geometrics and speed zones will be correlated with medical reports of road injuries. K. Wardill, A. M. Neilson. HRIS 51. ACTIVE

34. CONCRETE RESEARCH ASSOCIATION: P. O. Box 50156, Porirua

(3) Performance of Bedding Sands for Concrete Block Paving. To determine effects of sand characteristics on density for concrete block paving. G. H. Rowe. HRIS 24. ACTIVE

(4) Rock Properties and Use as Aggregate of Weathering Wellington Greywacke-Suite Rocks. To study weathering effects on greywacke-suite for determining utility limits as aggregates. G. H. Rowe. HRIS 61. ACTIVE

35. GABITES ALINGTON EDMONDSON: P.O. Box 13 078, Christchurch

(2) Goods Generation/Distribution Characteristics of Industrial/Commercial Land Uses. To evaluate a survey of firms as a source of goods movement data compared with traditional survey of truck movements. M. Douglass. G. Smith. HRIS 13. ACTIVE

36. AUCKLAND REGIONAL AUTHORITY: 120 Hobson Street, Auckland

(2) Ash Street Noise Abatement Study. Before and after study of traffic noise by replacing a tin fence with land scaped strip mesh fence. ARA/INTECH LTD/ MWD. HRIS 17. COMPLETE

39. BOOTH, SWEETMAN AND WOLFE: P.O. Box 2588, Aukland

(1) Concrete Cover and Reinforcement Corrosion. To evaluate concrete cover properties to reinforcement corrosion in bridges. C.J.A. Nicholas. HRIS 25. (Citations) COMPLETE

40. RADICKSON: 17 Peter Terrace, Castor Bay, Aukland.

(1) Accident Studies in Demonstration City. Studies of accidents in Takapuna City to identify possible safety demonstration projects. R.A. Dickson. HRIS 51. (Citations) COMPLETE

41. FRASER THOMAS GUNMAN SHAW AND PARTNERS P.O. Box 23 273, Aukland

(1) Investigation of Materials in an Old Road. Investigation of service life and condition of an old road built with materials not meeting current specifications. P. E. Fraser. HRIS 24. ACTIVE

42. B.J. JACKSON AND ASSOC.: P.O. Box 30591, Lower Hutt.

(1) Effectiveness of Service Lanes. To assess the effectiveness of service lanes and investigate extent of local authorities to plan and implement their use. B. J. Jackson. HRIS 54. ACTIVE

43. UNIVERSITY OF NEW SOUTH WALES:

(1) Thesis Study for Master of Engineering Degree. A thesis study on transport and highways. B.J. Jackson. HRIS 52. ACTIVE

44. DR. W.D.O. PATERSON: P.O. Box 16064, Christchurch

(1) Pavement Condition Rating for Functional Purposes. Development of a method for rating the functional conditions of pavements with emphasis on riding quality and adaptability for local use. W.D.O. Paterson. HRIS 24. ACTIVE

45. PAYNE SEWELL AND ASSOC: P.O. Box 168, Wanganui

(1) Evaluation Methods for Shell Rock on Unsealed Roads. Field trials on two types of shell rock with and without lime stabilization and under varying densities of traffic. G.W. Young. HRIS 24. ACTIVE

46. PORTLAND CEMENT ASSOC.: P. O. Box 2792, Wellington

(1) Cement Stabilization for New Zealand Roads. Office studies and user interviews to develop a User Manual for cement stabilization of roads. B. Tait. HRIS 62. ACTIVE

47. TRANSPLAN CONSULTING: P. O. Box 37144, Stokes Valley, Wellington

(1) Heavy Vehicles in an Urban Area. Before and after data collection on heavy vehicles in a shopping street, including control measures and finally a bypass. R.J. Chivers. HRIS 17. ACTIVE

(2) Review of Parking and Generation Characteristics of Urban Land Uses. Studies of completed research related to trips and parking in connection with land use to see what use is being made of the research and whether more is needed. J. Chivers. HRIS 54. ACTIVE

NIGERIA

Resurvey - 1980

Guy E. Otobo

The 1980 resurvey of Nigeria was reported by Mr. Guy E. Otobo, Assistant Director (Construction), Federal Ministry of Works. Thirty-five projects are included, 4 of them for the first time. One project is shown to be complete.

2. FEDERAL MINISTRY OF WORKS: Tafawa Balewa Square, Lagos

(3) Bridge Design. To find economic designs for different types of bridges, to replace sub-standard bridges. A.J. Oyebanji. HRIS 25. ACTIVE

(5) Possibility of Reducing Maintenance Problems of Roads by Regulating Wheel Loads and by Suitable Treatment of Verges. To study pavement strength in relation to maximum permitted loads, and to develop a water-resistant treatment for verges. HRIS 40. INACTIVE

(10) Skid Resistance of Road Surfaces in Nigeria, with Special Reference to Lagos. A comparison of skid resistances of various pavements being made using British pendulum apparatus. A. Ibrahim. HRIS 24. ACTIVE

(34) Physico-Chemical Properties of Black Cotton Soil. Determination of chemical and physical properties of these soils. O. A. Adekale, A. O. Madedor. HRIS 64. ACTIVE

(35) Lime Stabilization of Black Cotton Soils. Laboratory study to establish most economical percentage of lime to improve engineering properties of this soil for road construction. A.O. Madedor, O.A. Adekale, A.A. Orimalade. HRIS 62. ACTIVE

(36) Deflection Measurements on Nigerian Roads. To assess performance of Federal Trunk "A" and"B" roads with the Benkelman Beam, to obtain data for future design, as well as determining need for overlays to strengthen existing roads. A. O. Madedor, J. B. Esisi. HRIS 24. ACTIVE

(37) Skid Resistance of Road Surfaces in Nigeria. Use of the British Pendulum apparatus to measure skid resistance. J. B. Esisi, G.R.O. Cole, J.O. Adenaike, J.O. Uwadiale. HRIS 24. ACTIVE

(38) Materials and Road Building Research. Research into various aspects of using local materials for construction, to standardize specifications for construction plants, machines and equipments. A. O. Madedor and others. HRIS 33. ACTIVE

4. UNIVERSITY OF LAGOS, FACULTY OF ENGINEERING: Lagos

(9) Pavement Design on Black Cotton Soil. Laboratory testing of lime-stabilized black cotton soil to determine satisfactory designs in areas where this expansive soil is present. J. O. Jackson. HRIS 24. ACTIVE

(10) Performance of an Embankment on Deep Soft Clay. To investigate performance of a wide embankment on this clay and to observe and correlate data on pore pressure and compare actual settlement with predicted values. J.O. Jackson. HRIS 62. ACTIVE

(11) Materials and Road Building Research. Recommendations for use of local materials for road and building industry. HRIS 34. ACTIVE

(12) Studies on Bridge Deck Systems. A. O. Adekola. HRIS 25. ACTIVE

(13) Behavior of Short Reinforced Laterized Concrete Columns Under Random Loading. D. Adepegba. HRIS 25. COMPLETE

4. (16) Engineering Significance of Various Classifications of Laterite. J. O. Jackson. HRIS 61. ACTIVE

(20) Creep, Bending and Shear Strength of Laterized Concrete. Study of concrete in which the fine aggregate is replaced with laterite fines. D. Adepegba, Department of Civil Engineering. HRIS 32. ACTIVE

(22) Geotechnical Properties of Black Cotton Soil Related to Highways Design. An investigation of mineralogical and swelling characteristics of expansive black cotton soil. J.O. Jackson. HRIS 61. ACTIVE

New Projects

(24) Shear Lag in Pre-stressed and Non-Prestressed Concrete. To study shear lag in prestressed and non-prestressed concrete T and H sectioned beams. A. Adekola. HRIS 25. ACTIVE

(25) Research into Laterite. To study the combination of sand and laterite in concrete mixes; laterite concrete in flexure and shear; and fiber reinforced laterized concrete. D. Adepegba. HRIS 35. ACTIVE

(26) Stabilization of Problem Laterites and Geotechnical Properties of Black Cotton Soil. J. Jackson. HRIS 61. ACTIVE

8. DEPARTMENT OF CIVIL ENGINEERING, AHMADU BELLO UNIVERSITY: Zaria

(4) Materials and Building Research. To recommend use of local materials for road and building industry. HRIS 34. ACTIVE

(5) Strength of Pavements with Regard to Roadbed Quality. D.S. Omale. HRIS 24. ACTIVE

(6) Testing of Old Gravel Roads. D.S. Omale. HRIS 24. ACTIVE

(7) Analysis of Concrete Deformation and Laterite Concrete Deformation. S. Oleszkiewics. HRIS 32. ACTIVE

(8) Investigation of Expansive Clay Behavior in Highway and Foundations. P. Igharo. HRIS 62. ACTIVE

9. NIGERIAN INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH (NISER): University of Ibadan. Ibadan

(1) Transportation Planning, Development and Problems in Nigeria, with Special Emphasis on Road Transportation. To investigate problems of planning, development and management of road transportation, with distinction between inter-urban and intra-urban. S. O. Onakomaiya. HRIS 12. ACTIVE

(2) Road Traffic Accident Investigation and Analysis. To obtain data on why and how accidents occur. S. O. Onakomaiya. HRIS 51. FUTURE

(3) Commuter Transport for Lagos. S. O. Oduola. HRIS 16. ACTIVE

(4) Land Use and the Traffic Problems of Dugbe-Gbagi Central Area of Ibadan. An analysis of the contribution of existing land use patterns to problems of urban transport in the CBD, with proposals for changes in land use and transport improvement. S. O. Oduola. HRIS 15. ACTIVE

(5) Transport and Traffic Problems in Metropolitan Lagos - The Administrative Factor. An analysis of the factor as the basic cause of the problem with proposals for solutions. S. O. Oduola. HRIS 13. ACTIVE

9. (6) Cause of Motor Accidents in Lagos State: Some Empirical Evidence. To determine the major causes of accidents using an econometric model. A. Owosekun. HRIS 51. ACTIVE

(7) Land Use Organization and Transportation Problems in Nigeria. To relate existing land use organization to the flow of traffic generated with a view to finding out basic bottleneck areas. O. A. Olayemi. HRIS 12. ACTIVE

10. THE POLYTECHNIC, IBADAN: P.M.B. 5063, Ibadan

(1) Urban Traffic Problem in Nigeria. A comprehensive study of existing municipal road services, traffic management, land use and future trends, vehicle ownership, and new local planned road construction. C.D.O. Adebayo, O. Ogunlade. HRIS 16. (Citations) ACTIVE

New Project

(2) A Further Investigation into the Effect of Vehicle Characteristics on Accident Rates. Research to determine if there is a significant variation among types of vehicles in their accident rate and to identify the cause. O. Soluade. HRIS 51. ACTIVE

11. NIGERIA BUILDING AND ROAD RESEARCH INSTITUTE: P.M.B. 12568, Lagos

(1) Collection and Collation of Data on Main Nigeria Highways. To establish a data file on such items as sub-soil profiles, traffic, pavement design, construction materials, etc., so as to provide for future projects. HRIS 11. ACTIVE

(2) Effective Methods of Co-ordinating the Installation of Various Services Along Nigerian Roads. A comprehensive study of existing machinery for coordinating the installation of telephone cables, electric power cables, water and sewage pipes along roads, so as to minimize frequent obstructions to traffic caused by such installations. A. O. Masedor, P.D. Ofili. HRIS 21. ACTIVE

NORWAY

Supplementary Survey - 1980

The 1980 survey of Norway was conducted under the IRRD program and lists 51 new projects, of which 10 are being reported as completed. Project reports were received by the IRF from the British Transport and Road Research Laboratory, the English documentation center for the IRRD.

1. ROYAL NORWEGIAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH (Norges Teknisk-Naturvitenskapelige Forskningsraad) P. O. Box 70, Taasen, Oslo 8, (Sognsveien 72 Oslo 8)

   a. Institute of Transport Economics (Transportoekonomisk Institutt): P. O. Box 6110 Etterstad, Oslo 6 (Greseveien 86, Oslo 6)

(105) Operational Accounts in Bus Companies. To implement practical ways of collecting and arranging operational account data which will satisfy both the company's and the authorities' need for information. E. Abramsen. HRIS 11. IRRD 607073. ACTIVE

(106) Highway Lighting. Two alternates for road lighting contained in the Norwegian Road Plan for 1982-85 and 1986-89 - one that the Government finance all lighting and the other that it finance only densely built-up areas. F. Amundsen, K. Gabestad, A. Ragnoey. HRIS 14. IRRD 607074. ACTIVE

(107) Tunnel Width; Driver Behaviour in Tunnels. To study driver behavior in tunnels by measuring the lateral position of vehicles with results to be used for developing minimum standards for tunnel width. F. Amundsen, O. Haugbo. HRIS 55. IRRD 607123. ACTIVE

(108) Equality in Competitive Terms. To survey and evaluate the competition between main transport modes. O. Eidhammer, O. Hiorth, K. Oestmoe. HRIS 12. IRRD 607075. FUTURE

(109) Freight Transport by Truck. To survey the utilization of vehicles by category, registration, age, weight and volume by means of interviews. O. Eidhammer, B. Vold, O. Standnes. HRIS 15. IRRD 607076. FUTURE

(110) Lorry Costs, II. To produce standard figures for an optimal renewing policy for lorries, a manual for cost estimate and judgement of private transport versus hired transport and forecast cost trends up to year 2000. O. Eidhammer, N. Ringnes, T. Svegaarden. HRIS 15. IRRD 607077. ACTIVE

(111) Risks in the Transport System. To show the total of traffic injuries to the population, and how the accident risk varies as to road user group, traffic rules, etc. P. Froeyland, S. Garberg, T. Vaaje. HRIS 51. IRRD 607078. FUTURE

(112) Transportation in Sparsely Populated Areas. To find the best and most economical ways of covering travel demands in different categories of sparsely populated areas. E. Froeysadal. HRIS 16. IRRD 607079. ACTIVE

(113) Winter Maintenance and Political Economy. To compare different policies in highway winter maintenance by cost-benefit analysis. K. Gabestad, A. Ragnoey. HRIS 40. IRRD 607080. ACTIVE

(114) Use of Information in the Public Transport System in Oslo. To discuss information needed for confident and effective use of public transport including guidance between and on public transport stops, terminals, vehicles, etc. T. Garnaas, E. Abramsen, K. Aamodt, R.A. Porta. HRIS 11. IRRD 607081. ACTIVE

(115) Measures to Reduce Air Pollution. To assess the potentials of different traffic management techniques for reducing air pollution caused by road traffic. T. Granquist. HRIS 21. IRRD 607082. ACTIVE

1. a. (116) Impact Studies - Traffic Reorganizing. To assess how impact studies, or before and after studies, could be organized in order to measure different effects caused by traffic management measures. T. Granquist, T. Lerstang. HRIS 13. IRRD 607083. ACTIVE

(117) Travel Behaviour During a Bus Strike. To map the alternative travel behavior of bus passengers during a bus strike in the Oslo region in March 1980. O. Grov, T. Granquist. HRIS 16. IRRD 607084. ACTIVE

(118) Cargo in Towns. To examine town planning and freight transport, consequences for cargo handling, organization of freight transport, towns versus heavy transport and distant transport and work environment. K. Guttormsen, A. Holmeide, A. Lande. HRIS 16. IRRD 607085. FUTURE

(119) Procedures in Collection of Household Refuse. To describe the different jobs and procedures in various types of collection of household refuse. S. Lie. HRIS 11. IRRD 607086. ACTIVE

(120) Computer Aided Work Planning in Bus Companies. To evaluate the use of computers in preparing work plans for Norwegian bus companies. B. Roese, E. Abramsen, T. Granquist. HRIS 11. IRRD 607087. ACTIVE

(121) Taxi Services. To survey the traffic situation and operating conditions for taxis in Oslo. B. Roese. HRIS 16. IRRD 607088. ACTIVE

(122) Salting and Road User Behavior. To study whether salt actually contributes to traffic safety. H. Rudd, F. Amundsen. HRIS 40. IRRD 607089. ACTIVE

(123) Improvement and Maintenance of Gravel Roads. To investigate relationships between gravel road maintenance standards, maintenance costs, and vehicle operating costs. N. Skarra, H. Larssen. HRIS 40. IRRD 607090. ACTIVE

(124) Traffic Registration Equipment. To develop general purpose data logging and data retrieval equipment. N. Skarra, G. Milvang. HRIS 55. IRRD 607091. ACTIVE

(125) Decision Processes in Local Traffic Safety Work. To analyze the connection between the pronounced measures of traffic safety as to pedestrians and cyclists and measures carried out on the road system. A. Strand, B. Moen. HRIS 51. IRRD 607092. FUTURE

(126) Transfer and Transportation of Household Waste. To analyze different techniques and associated costs for transfer and transportation of household waste. R. Svendsen, N. Ringnes, B. Vold. HRIS 15. IRRD 607093. ACTIVE

(127) Tolls on Road Traffic in Oslo. To analyze how different traffic restraint measures such as parking control, toll road systems, supplementary licensing, etc., could function in Oslo. G. Nielsen, K. Oestmoe, T. Granquist. HRIS 14. IRRD 607094. COMPLETE

(128) Visual and Light Reflection Requirements on Unlit Roads. To present the state-of-the-art in the field of visibility on unlit roads, to discuss various problems involved, and suggest new research projects where relevant. S. Doerum, F. Amundsen, B. Brekke. HRIS 21. IRRD 607095. ACTIVE

3. PUBLIC ROAD ADMINISTRATION (Vegdirektorate) P.O. Box 8109 Dep. Oslo 1. (Grenseveien 92, Oslo 6)

a. Norwegian Road Research Laboratory: (Veglaboratoriet) Same address.

(61) Effect on Traffic Safety by Using High Luminance Road Surfaces. To investigate the effect of high luminance road surface courses on traffic safety. S. Doerum, F. Amundsen, H. Rudd. HRIS 51. IRRD 607096. ACTIVE

(62) Wear of Road Surface Mixtures in Troeger-Apparatus. To extend the knowledge of wear resistance of various road surfaces and develop a simple wear resistance test method. S. Doerum, E. Kristiansen. HRIS 24. IRRD 607097. ACTIVE

(63) Bridge Surfacing - Specifications. To develop specifications for bridge surfacing materials, including methods of maintenance. J. Johansen, J. Haga. HRIS 34. IRRD 607098. ACTIVE

b. Construction and Maintenance Division (Driftsavdelingen) Same address.

(13) Four Methods for Excavating Ditches Along Gravel Roads. To analyze four different methods for periodic re-excavation of ditches along gravel roads in relation to efficiency and economy. H. Aalefjaer, B. Andreassen, Hansen. HRIS 40. IRRD 607099. (Citations) COMPLETE

(14) A Basic Machine Unit in Highway Maintenance Work. To perform a technical and economical evaluation of small shovel dozers as basic machine units in highway maintenance work. J. Fossheim, B. Johannessen. HRIS 41. IRRD 607100. (Citations) COMPLETE

(15) Effect of Snow Chains. To consider the wear, wear resistance and friction effect of snow chains for various kinds of road graders and lorries on tires and surfaces. J. Fossheim, B. Johannessen. HRIS 41. IRRD 607101 (Citations) COMPLETE

e. Bridge Division: Same address.

(1) Wind Response of Cantilever Bridges Under Construction. To develop an improved design basis for dynamic response of cantilever bridges under construction, as well as to work out a design basis through laboratory research and field measurements. J. Teigen. HRIS 25. IRRD 607102. ACTIVE

5. NORWEGIAN INSTITUTE OF TECHNOLOGY (Norges Tekniske Goegskole): N-7034, Trondheim - NTH

a. Division of Transport Engineering: Same address

(28) The Effect on Traffic Safety of Minor Road Improvements (EMMA). To provide a catalog which describes the traffic safety effect of minor road improvements such as channelization, traffic signal, and traffic signs. K. Sakshaug. HRIS 51. IRRD 607103. ACTIVE

e. Institute of Soil Mechanics and Foundation Engineering: Same address.

(1) Soil Mechanics Properties of Clay Subjected to Freezing/Thawing Cycle. To investigate properties of artifically frozen/thawed soils including a series of triaxial tests on clay. L. Finborud, T. Johansen. HRIS 63. IRRD 607104. (Citations) ACTIVE

7. UNIVERSITY OF OSLO (Universitetet I Oslo): Karl Johans Gate 47. N-Oslo 1

a. Institute of Criminology and Criminal Law: Same address

(5) Alcohol and Fatal Traffic Accidents. To ascertain the role of alcohol and drugs in traffic accidents and effects of legislation. H. Andenaes. R. Soerensen. HRIS 52. IRRD 607105. (Citations) COMPLETE

12. NORWEGIAN INSTITUTE OF URBAN AND REGIONAL RESEARCH (Norsk Institutt For By-OG Regionforskning): P. O. Box 15 Grefsen, N-Oslo 4.

(2) The Main Road and the Surroundings in Rural Areas. To obtain data about the behavior and the attitude of the inhabitants living in rural areas in relation to the main road through the area. T. Lerstang. T Bysveen. A. Bratset. HRIS 17. IRRD 607106. (Citations) ACTIVE

(3) Improved Residential Areas. To work out guidelines for establishing or to expand special residential areas where among other things road traffic is only admitted on special terms adjusted to the residents' needs. T. Skjefstad. HRIS 16. IRRD 607107. (Citations) COMPLETE

14. MOERE AND ROMSDAL REGIONAL COLLEGE, TRANSPORT RESEARCH GROUP (Moere Og Romsdal Distriktshoegskole, Transportfaglig Forskningsgruppe): P.O. Box 308. N-6401, Molde

(4) Analyses of New Road and Ferry Connections in the Fosen Area. Norway. To analyze the consequences of road and ferry connections to some remote islands and places in the Trondheim fjord area. B. Andersen, A. Groevdal. HRIS 13. IRRD 607108. ACTIVE

15. NATIONAL INSTITUTE OF ALCOHOL RESEARCH (Statens Institutt For Alkoholforskning): Dannevigsvein 10, N-Oslo 4

(2) Traffic Accidents During a Wine and Liquor Store Strike. To describe the effects of reduced overall alcohol consumption because of a standstill in the sales of alcohol on the number of traffic accidents, personal injuries and deaths and on the number of people arrested for drunken driving. O. Jensen. HRIS 51. IRRD 607109. ACTIVE

16. NORWEGIAN ASPHALT CONTRACTORS RESEARCH LABORATORY (Asfaltindustriens Laboratorium - AIL): Kirkveien 71A, N1344 Haslum

(5) Ring Analysis of the Marshall Test. To analyze data from a ring analysis of the Marshall Test made by nine different asphalt laboratories with respect to repeatability and reproducibility. R. Evensen. HRIS 31. IRRD 607110. (Citations) COMPLETE

(6) Rolling of Surface Dressings. To investigate the rolling of surface dressings on roads with respect to the type and number of rubber wheeled rollers related to the placing volume and the climatic condition. R. Evensen. HRIS 33. IRRD 607111. FUTURE

(7) Tolerances on the Grading of Aggregates in Asphalt Mixes. To statistically analyze more than 6000 individual results from the production and compliance control of asphalt production in Norway in 1978. R. Evensen. HRIS 31. IRRD 607112. (Citations) COMPLETE

(8) The Influence of Type and Amount of Filler on the Properties of Asphalt Materials. To analyze the influence of type and amount of filler on the properties of asphalt materials in lab and field tests. T. Slyngstad. A. Arnevik, R. Evensen. HRIS 31. IRRD 607113. ACTIVE

17. NORWEGIANINSTITUTE FOR WATER RESEARCH (NorskInstitutt for Vannforskning):
P. O. Box 333, Blindern, Oslo 3

(2) Quality of Drainage Water from Highways. Potential Effect on Water Research. To estimate the amount of organic and inorganic matter leaving the highway during seasonal and meteorological episodes. J. Ferguson, E. Gjessing, E. Lygren. HRIS 17. IRRD 607114. ACTIVE

19. ASPLAN A/S: Ringeriksveien 23, N-1300, Sandvika.

(1) An Analysis of 85 Traffic Management Schemes and Plans in Norway. To investigate to what extent traffic management has been used in planning, as well as to what extent these plans have been realized. J. Johannessen, P. Krogh. HRIS 12. IRRD 607115. COMPLETE

(2) Generated Traffic and Transport Mode. To investigate the mechanism of traffic generation, including volume and modes to be expected. K. Johannessen, I. Gaasemyr, A. Rosseland. HRIS 55. IRRD 607116. ACTIVE

(3) Transport in the Structural Plan. To produce a guide for the local authorities to use in planning of transport within the frames of the structural plan. E. Johnsen, E. Proesch. HRIS 12. IRRD 607117. ACTIVE

(4) The Information System of the Public Transport in the Oslo Area. To coordinate existing systems and suggest ideas for a new information system which may make it easier for passengers to understand and use public transport. P. Krogh, K. Aamodt, T. Garnaas. HRIS 16. IRRD 607118. ACTIVE

(5) Planning of Access Roads. To inform local public road administrators and local authorities how to make better access road plans. B. Wiese, T. Kaurin. HRIS 12. IRRD 607119. COMPLETE

20. NORWEGIAN INSTITUTE FOR AIR RESEARCH (Norsk Institutt for Luftforskning):
P. O. Box 130, N-2001, Lillestroem.

(1) Atmospheric Corrosion Testing of Metallized, Metallized and Painted, and Painted Steel. To test atmospheric corrosion of metallized, metallized and painted, and painted steel by inspection of test sites and evaluation of results. S. Haagenrud. HRIS 34. IRRD 607120. (Citations) ACTIVE

21. DR. ING. A AAS-JAKOBSEN A/S: Parkveien 57, N-Oslo 2

(1) Bridge Decks for Suspension Bridge Made of Precast Concrete Elements. To develop concrete elements for use in bridge decks for suspension bridges. L. Blom-Bakke. HRIS 25. IRRD 607121. ACTIVE

(2) Endurance of Suspension Bridges Against Repeated Stresses. To calculate the dynamic effect of wind on suspension bridges by use of the Stochastic method. L. Blom-Bakke. HRIS 25. IRRD 607122. ACTIVE

PAKISTAN

Supplementary Survey 1980

Malik Mohammad Saeed Khan

The 1980 Survey of Pakistan was conducted by Mr. Malik Mohammad Saeed Khan. Deputy Chief, Planning Commission, National Transport Research Centre. The report lists 16 new projects, seven of which are shown to be complete.

1. PAKISTAN CENTRAL GOVERNMENT: Islamabad

a. National Highways Board P. O. Box 1205. School Road. F-6/1. Islamabad

(4) Inventory of National Highways. A complete inventory of 4389 Kms. of National Highways is being undertaken. K. Akbar. J. Nisar. HRIS 11. ACTIVE

d. National Transport Research Centre: 8-Agha Khan Road F-6/4. Islamabad

(21) Choice of Mode for Journey to Work (for Government Employees). Survey to determine travel Mode of largest category of commuters in federal capital area, considering costs and availability. A. Majeed. HRIS 12. COMPLETE

(22) Canal Roads for Public Use (Feasibility Study). A study of feasibility of using canal banks for public transportation, recognizing advantages in land acquisition and disadvantages in bridge construction, canal alignment and location with respect to distance between points. M.S. Swati. M.A. Farouk. HRIS 12. COMPLETE

(23) Bus Passenger Loads and Mileage - A Survey of Intercity Bus Operations. Sample survey on two local runs of randomly selected buses which revealed maximum loads, poor service and public complaints. A. Majeed. HRIS 12 . COMPLETE

(24) Highway Transportation Studies and Surveys. Study of methods of collection, storage and retrieval of transportation data to be used for planning. M. A. Farouk. HRIS 12. COMPLETE

(25) Transport Data Collection, Storage and Retrieval System. Study of role of statutes in transportation planning. M. A. Khan HRIS 12. COMPLETE

(26) Modern Transportation. Degree level course prepared by the Center for Allama IQBAL Open University to reflect latest development trends in transportation. M. S. Swati. M. K. Idris. HRIS 12. COMPLETE

(27) Motor Vehicle Ordinance - Working Paper. Revision of 1965 Motor Vehicle Ordinance reflecting views of concerned Governments and panel of experts. M. S. Swati. HRIS 70. COMPLETE

3. GOVERNMENT OF THE PUNJAB PROVINCE: Lahore

a. Highways Department, Road Research and Material Testing Institute: Research Campus, Lahore

(19) The Use of Lime Stabilization in the Road Construction as Sub-base and Base Material. The experimental use of lime stabilization in both sub-base and base course is being tried to alleviate construction materials shortage and reduce costs. N. A. Khan. K. R. Khan. J. Rehman. HRIS 62. ACTIVE

7. PAKISTAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY: Lahore

a. Civil Engineering Department: Same address.

(21) Road Mix Design. Study of the suitability of various types of locally available materials for use in premix. A. S. Sheikh. I. Ahmad. HRIS 24. ACTIVE

7. a. (22) Effect of Fines on Day Density of Aggregates. Using local materials. the effect of percentage of fines is being studied on day density of material with different grading. A. Rahman. A. Moghal. HRIS 35. ACTIVE

(23) Polishing Stone Value of Aggregates. Study to determine suitability of various local stones for use in surfacing. A. Rahman. M. Bashir. HRIS 35. ACTIVE

(24) Traffic Volume and Speed Studies at Shahrah Quaid-E-Azam. Lahore. A study of traffic characteristics on existing road network in Lahore to frame suggestions for necessary improvements. A.S. Sheikh. T.M. Anwar Malik. HRIS 55. ACTIVE

9. PAKISTAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH LABORATORIES
Peshwar

(5) Preparation of Cement from Rice Husk. Continuing research concerning controlled burning of rice husks when mixed with lime and trace additives produces a cement structurally comparable to Portland cement. R. A. Shah. J. Mehr. HRIS 32 ACTIVE

(6) Low Cost Rural Roads. A study of evolving techniques for the construction of low cost roads in rural areas with light traffic. R. A. Shah A.A. Sheikh. HRIS 33 ACTIVE

(7) Conversion of Petrol Engine to Bio-gas. A study aimed at designing a small spark ignition engine which could operate on bio-gas and be used in rural areas. A. H. Chotani. A. Mazharullah. A. Samap. HRIS 53 ACTIVE

PERU

Supplementary Survey - 1980

Cesar Torreblanca B.

The 1980 Survey of Peru was conducted by Sr. Ing. Cesar Torreblanca B. The report lists 4 new projects, two of which are shown to be complete.

1. MINISTRY OF TRANSPORT AND COMMUNICATIONS (Ministerio de Transportes y Comunicaciones): Av. 28 de Julio 800, Lima

   b. Land Transport General Department (Dirección General de Transporte Terrestre): same address.

      (39) Highways: Lima-Chimbote; Lima-ICA. Improvement in highway links of the route between the North extreme in Ecuador and the South one in Chile. Sections of 359 and 234 Km., respectively, to be built. Direccion De Estudios y Disenos. HRIS 12 — COMPLETE

   c. Research and Development Department (Oficina de Investigación y Desarrollo): same address.

      (5) Fluvial Channels. Study to determine feasibility of nine possible channels of interconnection within Peru's 16,000 miles of navigable rivers. S.C. Cajja-Maguiña, L.R. Carrasco. HRIS 22. (Citations) — ACTIVE

      (6) Evaluation of Pavement Performance Under the Effects of Weather Conditions. Study of 16 roads to diagnose effect of weather conditions on pavement design, construction and maintenance. D.E. Moyasevich Baca, W. A. Navarro Sanchez. HRIS 24. — COMPLETE

      (7) Bio Mass-Carburants for Automotors. Project to create carburants by bio-mass process, emphasizing use of sugar. S.C. Cajja-Maguiña, W. Dreifuss, L. Valle. HRIS 53. — ACTIVE

PHILIPPINES

Supplementary Survey - 1980

José C. Santos

The 1980 survey of the Philippines was reported by Mr. José C. Santos, Director, Soils and Materials Quality Control Service. Seven new active projects are listed.

1. DEPARTMENT OF PUBLIC HIGHWAYS: 2nd Street, Port Area, Manila

b. Soils and Materials Quality Control Service: Sta. Lucia Street, Intramuros, Manila

(20) Study of Different Additives for Bituminous Mixtures. To determine effect on the performance and life of bituminous pavement by use of the asphalt additives Pave Bond 100 and chem-crete. P. V. Revillame, E.R. Joson, G. Gregorio. HRIS 31. ACTIVE

(21) The Effect of Hydrated Lime on Bituminous Mixes. To determine the most effective amount of hydrated lime in bituminous mixture to improve cohesion and resistance to water damage. P. V. Revillame, C.M. del Rosario. HRIS 31. ACTIVE

(22) Soil Stabilization by Various Compounds. To determine the effectiveness for stabilization of inferior soils of the additives Reynolds Road Packer, Terra Bond, and Lime-Polymer. G. C. Lazaro, G. Gregorio, Q. Munar, M. Fe Concepcion, S. Lofamia. HRIS 62. ACTIVE

f. Engineering Research and Training Unit: Same address

(1) Review of Drainage Facilities Standards. To identify causes of failures and damages to drainage facilities and formulate design guidelines for drainage, erosion control and slope protection. B. S. Leuterio, Q. S. Munar, P. Tubal. HRIS 22. ACTIVE

(2) Investigation of Bridge Approach Failures. Study to identify causes of failures and damage of bridge approaches and devise remedial measures. N.M. Abarca, A. Abejuela, P. Tubal. HRIS 25. ACTIVE

g. MPH Board of Engineering Review: c/o U.P. Transport Training Center, Diliman, Quezon City

(1) Investigation of Pavement Failures. To determine cause of pavement failure through soil and case borings and formulate remedial measures. Board of Engineering Review Staff. HRIS 24. ACTIVE

(2) Research Study of Landslides. Identify causes of landslides, recommend remedial measures and change in design to prevent future problems. Board of Engineering Review Staff. HRIS 63. ACTIVE

POLAND

Supplementary Survey - 1980

Jerzy Walawski

The 1980 survey of Poland, reported by Mr. Jerzy Walawski, Deputy Director, Central Office of Public Roads, lists 16 projects not previously reported, two of which are shown to be complete.

2. ROAD AND BRIDGE RESEARCH INSTITUTE (Instytut Badawczy Drog i Mostov) 40 Stalingradzka Street, 03-301, Warsaw

(104) A Method for Multi-Criterion Analysis of Highway Investments. A new method of expenditure analysis taking into consideration future development and environment protection and including a point out system to assist in optimum selection. H. Chrostowska. HRIS 14. ACTIVE

(105) Hydromechanical Sowing of Slopes. Research and Development. Research and development of a hydromechanical sowing of slopes, including application of various materials in field tests. K. Dzierzawski. HRIS 23. ACTIVE

(106) Research and Experimental Work Concerning Classification of Mineral and Waste Powders. Continuation of the project "Experiments Concerning Suitability of Different Mineral and Waste Powders for Use in Bituminous Mixes," which has been completed. E. Chalaczkiewicz. HRIS 34. ACTIVE

4. CRACOW TECHNICAL UNIVERSITY (Politechnika Krakowska): 24 Warszawska St. 31-155, Kraków

b. Institute of Roads, Railways and Bridges. Same address.

(6) Application of Computer Techniques for Junction Designing. Use of computer simulation to improve junction design methods including study of auxiliary lanes, grade separation, capacity and economic factors. M. Tracz, J. Chodur, S. Gaca, S. Gondek. HRIS 21. ACTIVE

(7) Rules of Quality Control and Acceptance Inspection of Big Highway Projects. Creation of a statistical quality control and acceptance inspection system, revision of tolerance limits, and change in acceptance rules. S. Datka, J. Jeleński, K. Smukalski. HRIS 33. ACTIVE

5. WROCLAW TECHNICAL UNIVERSITY (Politechnica Wrocklawska): Wybrzeze Wyspianskiego 27, 50-370 Wroclaw

a. Civil Engineering Institute: Same address

(11) The Mechanical Properties of Cement Stabilized Soils in the Conditions of Load Repetitions. To apply the material properties of cement stabilized soils to dimensioning of roadways. B. Stypulkowski. HRIS 62. ACTIVE

b. Institute of Chemistry and Technology of Petroleum and Coal: Same address

(5) Technology of Paving Asphalt and Additional Amounts of Oil Stock Production. A method of simultaneous distillation of paving asphalt and paraffinic and paraffine - naphtenic crudes. I. Gawel, M. Rutkowski. HRIS 31. (Citations) ACTIVE

6. TECHNICAL UNIVERSITY OF GDANSK (Politechnika Gdanska): Majakowskiego 11-12 Gdansk

(22) Study of Traffic Conditions on Upgrade of Two-Lane Highways. Investigation of ways to upgrade two lane highways in Poland, including design of climbing lanes and method of calculating equivalent coefficients for trucks. R. Krystek, L. Hoppe, K. Jamroz, L. Michalski, J. Sosin, T. Szczuraszek. HRIS 53. COMPLETE

6. (23) Study of Effectiveness of Warsaw Traffic Control System. The results of theoretical and experimental research on Warsaw Traffic Control System (WTCS) carried out in 1977-1979. R. Krystek, L. Hoppe, K. Jamroz, J. Sosin. HRIS 54. COMPLETE

7. TECHNICAL UNIVERSITY OF WARSAW (Politechnika Warszawa): Filtrowa 1, Warsaw

a. Institute for Road and Bridge Design and Construction: Same address.

(9) An Estimation of Urban Transport Systems Efficiency. To develop a method of quantitative estimation of the efficiency of the urban public transport systems. A. Sambor. HRIS 11. ACTIVE

(10) System TROP/TRASA. Preparation of System TROP as a subsystem of TRASA to find the optimum route for heavy transports. Z. Bzymek, L. Radlo. HRIS 11. ACTIVE

(11) Analysis of Variability of Sight Distance Along Two-way Single Carriageway Rural Roads. To give users' point of view of existing and designed roads with respect to sight distance and other factors affecting visibility. T. Sandecki, A. Cielecki, T. Zielinski. HRIS 21. ACTIVE

(12) Development of System INTERSTRAINS for Design of Bridges. A computer system to conduct the analysis of internal forces and deformations in bridge superstructures. Z. Bzymek, T. Gajewski. HRIS 25. ACTIVE

(13) Application of STRAINS to the Design of Bridges. To organize the data contained in the STRAINS computer system for statistical analysis of structures so they can be applied to forces occurring under special loadings. Z. Bzymek, M. Gryszkiewicz, M. Winiarski, T. Gajewski. HRIS 25. ACTIVE

(14) The Development of INTERKABE System. To develop a computer system for the design of prestressed concrete bridge girders. Z. Bzymek, M. Marcinski, M. Winiarski. HRIS 25. ACTIVE

(15) Application of System KABE to the Evaluation of Carrying Capacity of Existing Bridges. To adapt the KABE computer system for the design of prestressed concrete bridge girders to the evaluation of the carrying capacity of existing bridges. Z. Bzymek, M. Marcinski. HRIS 25. ACTIVE

PORTUGAL

Resurvey - 1980

The 1980 resurvey of Portugal was conducted through the cooperation of the IRRD. Thirty-five projects were reported, nine for the first time. Six projects are shown to be complete. The reports were transmitted to the IRF by the British Transport and Road Research Laboratory, the English documentation center for IRRD.

1. MINISTRY OF PUBLIC WORKS - GENERAL DIRECTORATE OF HIGHWAYS (Ministerio de Obras Publicas - Junta Autonoma de Estradas): Praca da Pertagem, Almada 2800

a. Research and Planning Department: Same address

(4) Physical Characteristics of Soils. Based on numerous test results, correlations between some physical characteristics of various soil types are sought. E. Costa, M. Santos. HRIS 64. IRRD 601063. COMPLETE

(8) Selection and Location of Permanent Counting Stations in the Road Network. To establish the methodology used to select census stations for installation of automatic traffic counters. J. M. Tome. HRIS 55. IRRD 606438. COMPLETE

(11) Bridge Priority Program: Evaluation of the Improvements to Bridges with Less than 4.5 meters in Cross-section. To devise a ranking scheme and establish a priority program for improvement of these narrower bridges. J.M. Tome, M. J. Lopes. HRIS 11. IRRD 606441. ACTIVE

(12) New Methodology for the Portuguese General Traffic Census. To devise a new methodology for a general traffic census which would reduce the duration of the counting periods as well as the number of stations, without changing the accuracy of the AADT estimates. J.M. Tome. HRIS 55. IRRD 606442. ACTIVE

New Projects

(13) Management Information System for the Portuguese Highway Organization. To implement a management information system for the activities of the Junta Autonoma De Estradas, the Government agency responsible for the planning, design, construction and maintenance of the national highways in Portugal. N. Silva, M. Perneco, A. Fonseca. HRIS 11. IRRD 607347. (Citations) ACTIVE

(14) New Methodology for Evaluating Highway Investments in Portugal. To include those factors that cannot be expressed in monetary terms, such as social factors, in the methodology of evaluation of investments in the highway sector. L. Adao E. Silva. HRIS 15. IRRD 607348. ACTIVE

b. Maintenance Department: Same address.

(1) Primary Destinations in Signing Highways - A Case Study in Portugal. To suggest new methods of design for direction signs and analyze criterion concerning the message given on the signs. J. Marques. HRIS 54. IRRD 607346. COMPLETE

2. MINISTRY OF PUBLIC WORKS - NATIONAL LABORATORY OF CIVIL ENGINEERING (Ministerio de Obras Publicas - Laboratorio Nacional de Engenharia Civil): Avenida Brasil, Lisbon, 1799

a. Department of Geotechnique - Foundations Division: Same address

(1) Dynamic Behavior of Soils under Vibratory Loads in the Range of Seismic (Earthquake) Frequency. To determine dynamic behavior of many different types of soil under vibrating loads in the frequency range used for seismic studies. J. Folque, G. Castro, A. Rodrigues. HRIS 64. IRRD 603602. (Citations) INACTIVE

(2) Experimental Models for the Study of Soil Mechanics. To aid in obtaining a better understanding of the properties and behavior of soils in embankments, on cut slopes and in the distribution of soil pressures on retaining walls. J. Folque. HRIS 64. IRRD 603603. (Citations) INACTIVE

b. Department of Geotechnique - Roads and Airfields Division: Same address

(19) Pavement Strengthening Design. To improve and adapt method developed at the Laboratory for pavement design to secure better practical efficiency. O. A. Pereira, H.R. Duarte, Mrs. Almeida, A.J. Morais. HRIS 24. IRRD 604984. ACTIVE

(20) Apparatus for Load Tests at Airports. Study and construct a device to carry out heavy load tests up to 20-25 tons on pavements. O.A. Pereira. HRIS 24. IRRD 604985. INACTIVE

(21) Study of the Influence of Water on the Bearing Capacity of Road Pavements. Quantitative analysis of influence of moisture on bearing capacity of typical soils and pavements for purpose of being able to predict possible seasonal variations. O.A. Pereira, H.R. Duarte. HRIS 62. IRRD 604986. ACTIVE

(22) Study of the Skidding Properties of Road Pavements and of the Corresponding Materials. Study of methods and equipment for measuring skid resistance and determining changes in value of that resistance with time. O.A. Pereira, H.R. Duarte, A.J. Morais. HRIS 24. IRRD 604987. ACTIVE

(23) Preparation of Recommendations Concerning Roadworks. Prepare a guide for materials selection and for control and supervision of construction of roadworks. O.A. Pereira, A.J. Morais, M.F. Alves. HRIS 33. IRRD 604988. ACTIVE

(24) Studies on the Fatigue Behavior of Road Materials. Study of the behavior of bituminous mixtures and granular base courses under action of rolling loads and repetitive loading so as to compare behavior of different materials. O.A. Pereira, P.R.A. Gontijo, H.R. Duarte. HRIS 24. IRRD 604989. ACTIVE

c. Department of Geotechniques - Site Exploration Division: Same address.

(2) Vibrations Due to Road and Railway Traffic. To measure, and prepare methods of control of, vibrations related to construction and use of both surface and underground transportation networks, and to issue standards defining allowable vibration levels. J. Moura Esteves. HRIS 17. IRRD 605024. ACTIVE

(3) Study and Improvement of New Techniques of Survey and of Geotechnical Prospecting. To develop procedures for using remote sensing techniques in the preparation of geotechnical maps applied to different levels of town planning studies. R. Oliveira, A. Gomes Coelho. HRIS 61. IRRD 605025. ACTIVE

PORTUGAL (contd)

2. d. Department of Geotechniques - Traffic and Safety Division: Same address

(1) Urban Transportation Development Models. Development and implementation of a series of urban and transportation mathematical models adapted to specific conditions of Portugal, with regard to existing information system. A. Castilho, P. Geraldes. HRIS 13. IRRD 603616. (Citations) ACTIVE

(2) Systemization of Accident Records and of Method for Rapid Detection of Accident Black Spots. Particularly on Heavily Trafficked Roads. To establish accident records in a form that would allow automatic processing. A. Castilho, J. Menezes. HRIS 51. IRRD 603607. (Citations) ACTIVE

(3) Examination and Diagnoses of Accident Black Spots: Before and After Studies. Detailed study of black spots in order to improve and make more efficient the steps being taken to eliminate such hazards by studying the results of corrective actions. A. Castilho. HRIS 51. IRRD 603608. (Citations) ACTIVE

(4) Studies Concerning Road Safety Equipment, Especially Highway Barriers Made of Different Materials. Cost-benefit analysis of the reduction of consequences of accidents with several types of barriers. A. Castilho, A.L. Macedo. HRIS 51. IRRD 603609. (Citations) ACTIVE

(5) Updating of Automatic Programs for the Design of Transportation Networks. To optimize the possibilities of computer being used for automatic design of transportation networks. A.J. Castilho, P.A. Geraldes, A.L. Macedo. HRIS 12. IRRD 603620. (Citations) ACTIVE

New Projects

(6) Studies on Traffic and Safety in Public Service Transportation. To study several specific problems regarding traffic and safety in public service transportation, namely those concerning scheduling, use of specific lanes and safety of drivers and passengers. A. Castilho. HRIS 51. IRRD 607349. ACTIVE

(7) Studies on Accidents in Urban Zones. To identify the main causes of accidents in urban zones, with a view to eliminating them. A. Castilho, J. Menezes. HRIS 51. IRRD 607350. ACTIVE

e. Department of Geotechnique - Special Geotechnical Studies Division: Same address.

(1) Studies on Slope Stability and Stress Distribution as regards Status and Dynamic States. To establish methods for ascertaining slope safety, based on an evaluation of stress distribution in rock masses and the strength characteristics of the slope material. J.M. Falcao. HRIS 61. IRRD 605722. ACTIVE

f. Construction Materials Department: Same address.

(3) Paints for Carriageway Marking and Bridges. Testing of paints for roadway marking and bridge painting. A.V. Seabra, M.I.E. Marques. HRIS 34. IRRD 601202. (Citations) ACTIVE

g. Acoustics and Lighting Division: Same address.

(1) Road and Aircraft Traffic Noise. To quantify the reactions of town dwellers to noise from external sources and establish correlation between reactions and the values of the parameters taken as characteristics of sound stimuli concerned. P.M. Silva, A.M. Salta. HRIS 17. IRRD 605723. ACTIVE

(2) Road and Aircraft Noise. To adjust the mathematical models for forecasting characteristics of this noise in order to increase the range of applicability of the models. P.M. Silva. HRIS 17. IRRD 605725. (Citations) ACTIVE

PORTUGAL (contd)

New Project

2. g. (3) Exterior Noises. Annoyance Assessment and Attitude Towards Noise Measurement. To provide an objective assessment of urban traffic noise induced annoyance. L. Soczka. HRIS 23. IRRD 607351. (Citations) ACTIVE

h. Division for Investigation of Structures: Same address.

(1) Observation and Testing of Works of Great Structural Importance. To obtain a better knowledge of structural behavior characteristics with relation to time, and develop more rapid means of obtaining the effects of repetitive loading. HRIS 25. IRRD 605724. ACTIVE

i. Structural Analysis Division: Same address.

(1) Mathematical Models for Determining Forces in Concrete Bridge Decks. Application of computers to automation of determining influence lines, internal forces and other aspects of design and analysis. J.A. Fernandes. HRIS 25. IRRD 605726. ACTIVE

4. MINISTRY OF PUBLIC WORKS - GENERAL DIRECTORATE OF LAND TRANSPORTATION (Ministerio da Obras Publicas - Direccao Geral dos Transportes Terrestres): Avenua Forcas Anmades, 40, Lisbon

a. Department for Study and Planning: Same address.

(3) Cost of Road Infrastructures in Order to Price Them. Establishment of costs of infrastructures in order to define a pricing policy and achieve coordination of transport modes, harmonization of the market and parity of economic activity within the economy. C. Antunes, A. Magaalhaes. HRIS 15. IRRD 600292. INACTIVE

New Projects

5. PREVENCAO RODOVIARIA PORTUGUESA (Portuguese Road Association): Rua Rosa Araujo 12, 1200, Lisbon

(1) The Cost of Road Accidents in Portugal. To devise a methodology for assessing the total cost of road accidents and the average cost per accident. M. Henriques. HRIS 51. IRRD 607352. COMPLETE

(2) Periodical Vehicle Control. To determine the relation between the mechanical condition of vehicles and road accidents. A. Silva. HRIS 53. IRRD 607353. COMPLETE

(3) Diagnosis of the Failure of Statistical Data and Presentation of Some Information Sources. Survey and Treatment of Data and Methodology to be Adopted. To register some variants which are useful to the study of road accidents and to practical methods of obtaining respective data. M. Henriques. HRIS 51. IRRD 607354. COMPLETE

ROMANIA

Updated - 1980

Stelian Dorobantu

The 1980 updating of Romania was reported by Professor Stelian Dorobantu, Construction Institute of Bucharest. Seventy-five projects, previously reported, are listed, of which 20 are shown to be complete.

1. DIRECTORATE GENERAL OF HIGHWAYS (Directa Generala a Drumurilor): 38 Dinicu Golescu Boulevard, Sector 8, 7000 Bucharest.

(7) Road Construction Terminology. To clarify terminology and supplement definitions in road construction and maintenance. L. Nicoara. HRIS 11. ACTIVE

(9) Investigation into Damage by Frost. To determine the frost damage on roads and increase knowledge of results for use in road construction. A. Constantin. HRIS 64. ACTIVE

a. Institute for Research and Technological Design in Transport (Institutul de Cercetari si Proiectari Technoloogice in Transporturi): 393 Grivitza Avenue, 7000 Bucharest 26.

(16) New Types of Bridge Superstructures, New Construction and Mounting Technologies. Laboratory and in-situ studies on the use of composite bridge beams made of metal and prestressed concrete. C. Rusu, M. Ionescu, M. Anitei. HRIS 25. ACTIVE

(20) Automatic Dynamic Weighing of Motor Vehicles. Development of an automatic weighing device consisting of a platform flush with the roadway, and electronic devices for weighing and recording measured weights by vehicle class. G. Gheorghiu, L. Chiodan, C. Gheorghe, M. Nicolau. HRIS 55. ACTIVE

(34) Consolidation of Embankments in Flooded and Irrigated Areas. Establishment of a catalogue giving solutions for protection and consolidation of embankments located in flooded or irrigated areas. V. Strunga, O. Dima. HRIS 62. COMPLETE

(36) Road Structure Fatigue as Related to Climatic Factors. Behavior determination of different bituminous mixture types at repeated loadings so as to draw up rating method for fatigue in Romanian climatic conditions. G. Fodor, D. Teodorescu, V. Paraschiv, L. Chiodan, M. Bradler, F. Padure. HRIS 24. ACTIVE

(37) Road Structures with Thermal Insulator Layers. Investigation of use of a layer of thermal insulator material in flexible pavement structures to resist freeze-thaw actions under continental conditions. G. Fodor, D. Teodorescu, V. Paraschiv, M. Bradler, O. Achimescu, F. Padure. HRIS 24. ACTIVE

(38) Electronic Portable Scale for Static Vehicle Weighing. Development of a scale able to weigh up to a 20-ton axle load. L. Chiodan, C. Georescu, O. Tudor, V. Smighelschi. HRIS 55. ACTIVE

(39) Researches Regarding Elaboration of a Catalogue of Bitumen Quality for Roads and Bitumen Quality Improvement using Additives. Study of bitumens from point of view of component elements and groups of components rheological behavior, ageing susceptibility, adhesiveness and physic-chemical characteristics, in both laboratory and field sectors, as well as study of additives to increase coating ability. T. Teodorescu, O. Achimescu, I. Voinea, C. Alifanti. HRIS 31. COMPLETE

1. a. (40) Methods and Criteria for the Establishment of Road Bridge Bearing Capacity. An investigation to establish bridge bearing capacity compared with present loading given by current traffic. C. Rusu, A. Pesnicu, R. Ungur, Ch. Tudorie. HRIS 25. ACTIVE

(42) Technologies of Getting Rough Rolling Surfaces Using Synthetic Materials. Establishment of techniques for providing skid-resistant surfacings so as to reduce traffic accidents. G. Giusca, M. Naiu. HRIS 24. ACTIVE

(44) Location, Disposal and Prospective Utilization of Waste Materials in Road Construction. A survey of major waste materials such as mine tailings, metalurgical slag, blast furnace slag, quarry wastes and their application in road construction. M. Turcu, D. Tulia, L. Anghel, D. Todor, I. Molan. HRIS 34. (Citations) COMPLETE

(45) The Improvement of Skid Resistance of Pavement Surfaces against Side-Slipping. To develop skid resistance measures against slipping, considering such local conditions as climate, longitudinal profile, etc. G. Giusca, M. Naiu, V. Moraru. HRIS 24. ACTIVE

(47) Research Concerning Establishment of Bearing Capacity and Operational Safety for Highway Bridges. To determine real permanent loads, the live loads for design, and establish safety measures. A. Pasnicu, R. Ungur, N. Mihalache. HRIS 25. ACTIVE

(49) Traffic Characteristics Study. An analysis of stochastic properties of traffic characteristics and modelling of their variations on rural roads networks. M. Nicolau, M. Dobrescu, M. Ionescu, E. Ionescu. HRIS 55. ACTIVE

(50) Behavior Under Service Conditions of Asphaltic Coats Made of Romanian Bitumen. To check bitumen quality by surveying the asphaltic mixture behavior under service conditions. D. Ionescu-Teodorescu, I. Voinea, O. Achimescu, T. Dima. HRIS 24. ACTIVE

(53) Behavior of Composite Structure of Highway Bridges with Continuous Spans. Checking of one calculation hypothesis of continuous girder bridges made of steel girders keyed to the concrete deck. M. Ionescu. HRIS 25. ACTIVE

(54) Reduction of Number of Diaphragms of Road Bridge Deck Composed of Precast, Prestressed Concrete Beams. Laboratory and Field Tests for building decks with one middle span diaphragm or without any. M. Anitei. HRIS 25. ACTIVE

b. Research and Design Institute for Road and Harbour Works (Institut de Cercetare si Proiectare Pentru Lucrari Rutiere si Portuare): 38 Dinicu Golescu Boulevard, Sector 8, 7000 Bucharest.

(3) Use of Photogrammetry in Space-Temporal Determinations. E. Cotovanu. HRIS 21. ACTIVE

(4) Use of Data Banks in Design Problems Concerning Road Modernization and Construction. Gh. Oblemence, C. Marinesen. HRIS 21. ACTIVE

2. CONSTRUCTION INSTITUTE (Institutal de Constructii): Boulevard de Republicii 176, Sector 3, 7000 Bucharest

(1) Use of Partial Prestressing in Bridge Prestressed Concrete Beams. R. P. Ionel, Bridge Research Laboratory. HRIS 25. COMPLETE

2. (2) Solid Web Girders, Hydrid Girders, Box (Tublar) Girders, Torsion and Torsion-Bending Stresses; Local Buckling of Plates Under Point Loads. C. Andrei, A. Iulian, B. Edgar, B. Ion, O. Ovidiu, Bridge Research Laboratory. HRIS 25. COMPLETE

(3) The Marshall Stability and the Flow Value Correlations for Bituminous-Aggregate Mixtures. S. Jercan, Road Research Laboratory. HRIS 31. ACTIVE

(4) Thermo-Mechanical Stability of the Bituminous Layers. A. Pinescu, Road Research Laboratory. HRIS 31. COMPLETE

(5) Checking of Welded Joints, Concerning Low-Alloy Steels Used in Elevated Construction and Steel Bridges; Fatigue Tests of These Welded Joints. A. Caracostea, I. Alexiu, E. Buiu, I. Buca, O. Opran, Bridge Research Laboratory. HRIS 34. ACTIVE

(6) Methods for Origin-Destination Studies. S. Dorobantu, C. Romanescu, Road Research Laboratory. HRIS 55. COMPLETE

(7) Use of Clay Soils for Highway-Subgrade Construction During the Frost-Melt Periods. S. Dorobantu, P. Carmen, C. Romanescu, Road Research Laboratory. HRIS 62. ACTIVE

(8) Effect of Compactive Effort and Molded Moisture Content on Soils Modulus of Elasticity. S. Jercan, C. Pauca, Road Research Laboratory. HRIS 62. COMPLETE

(10) Landslides and Consolidation Methods Connected with Stability of Roads and Railways. Stability analyses of natural and man-made slopes taking account of climatic factors, proper shear strength parameters and a more general stress-strain relationship of involved soils. I. Stanculescu, M. Popescu, C. Athanasiu, Soil Mechanics and Foundation Research Laboratory. HRIS 63. COMPLETE

(11) Studies of Non-Linear Stress-Strain Behavior of Soils and Multi-Layered Systems by Use of Finite Element Analysis. Use of a finite element technique to simulate the behavior of multi-layered systems resting on soils with non-linear stress-strain relationships. I. Stanculescu, C. Athanasiu, M. Popescu Soil Mechanics and Foundation Research Laboratory. HRIS 63. ACTIVE

(12) Skid-Resistant Bituminous Pavement Surfaces. Laboratory and in-situ tests on non-skid bituminous pavement surfaces for design purposes. S. Jercan, I. Racanel, Road Research Laboratory. HRIS 24. COMPLETE

(13) Continuous Reinforced Concrete Pavement. A laboratory and field study of the first continuous reinforced concrete pavement in Romania. S. Dorobantu, H. Zarojan, A. Pinescu, I. Racanel, E. Sovarel, Road Research Laboratory. HRIS 24. ACTIVE

(14) Bituminous Aggregate Mixtures with Poor Clayey Gravel and Sand. An investigation to determine conditions needed with use of such materials in bituminous mixtures. C. Pauca, Road Research Laboratory. HRIS 31. ACTIVE

(15) Stockpile Bituminous Mixtures. Establishment of means and methodologies for winter road maintenance. S. Jercan, C. Romanescu, Road Research Laboratory. HRIS 40. ACTIVE

(21) Buckling of Webs (Longitudinal Stiffener Stringer) due to Eccentric Loads. Theoretical and experimental work to establish behavior of webs, with longitudinal stiffener stringers, under eccentric loading. E. Buiu, Bridge Research Laboratory. HRIS 25. COMPLETE

2. (22) Soil Structure Interaction Influences on Foundation Contact-Pressure Distribution. Use of the finite element method in calculating the distribution of contact pressure between foundation and soil taking into account the influence of foundation and superstructure flexibility. I. Stanculescu, C. Athanasiu, Soil Mechanics and Foundation Research Laboratory. HRIS 62. COMPLETE

(23) Speed-Flow Relations on Rural Roads in Romania. Investigate this relationship on different types of rural roads. S. Dorobantu, A. Pasnicu, M. Ionescu, R. Fughina. Road Research Laboratory. HRIS 55. ACTIVE

(24) Practical Design of Sheetpile Bulkheads. Develop design method of sufficient accuracy in relation to reality for practical application. S. Dorobantu and others. Road Research Laboratory. HRIS 25. COMPLETE

(26) Skidding Resistance of Surfacings. Assess performance of skid resistant characteristics of different types of experimental surfacings. S. Dorobantu, S. Jercan, Gh. Oprea. Road Research Laboratory. HRIS 24. COMPLETE

(28) Investigation of the Steel Plate Behavior Loading Perpendicular on the Rolling Direction. Study of the characteristics of loading perpendicular on rolled plates and suggest conditions for taking delivery of the plates. A. Caracostea, H. Salajan, I. Buca, Bridge Research Laboratory. HRIS 34. ACTIVE

(31) Analysis of Deep Excavations in Active Fissured Clays. Investigation of the influence of initial horizontal earth pressure and moisture variations on slope stability. I. Stanculescu, M. Popescu, C. Athanasiu. Soils Mechanics and Foundation Laboratory. HRIS 62. ACTIVE

(32) Contact Stress Distribution Under Mat Rigid Foundations for Grain Soils. Theoretical and small scale tests to calculate the contact stress under a mat foundation using Glotzl type pressure cell. I. Stanculescu, C. Athanasiu, D. Dimitriu. Soil Mechanics and Foundation Research Laboratory. HRIS 62. ACTIVE

(33) Superposition of Load Stresses with Stresses Due to Climatic Actions on Rigid Pavements, and Application to Rigid Pavement Design. A theoretical and experimental approach on temperature and drying shrinkage stresses, taking into account daily temperature variations, maximum drop after concrete gains full strength, wheel load effects, etc. I. Stanculescu, S. Dorobantu, I. Racanel. Road Research Laboratory. HRIS 24. ACTIVE

(34) Asphalt Mixtures for Waterproofing. A laboratory study of different types of asphalt mixtures for waterproofing canals. S. Jercan, C. Romanescu, Road Research Laboratory. HRIS 31. COMPLETE

(35) Small Scale Tests on Contact Pressure Distribution under Rigid Plates Resting on Sand. Pressures measured by Glotzl type pressure cells between rigid plates and sand beds of different densities. I. Stanculescu, C. Athanasiu, Soil Mechanics and Foundation Laboratory. HRIS 62. COMPLETE

(37) Stress-Strain Analysis of Excavated Slopes in Red Active Clay. To study such effects as initial stress condition, non-linear stress-strain behavior, shear strength reduction due to clay swelling, and shrinkage fissures. I. Stanculescu, M. Popescu, Soil Mechanics and Foundation Laboratory. HRIS 63. ACTIVE

2. (38) Evaluation of Slope Stability Methods of Analysis. Use of computer programs to compare various methods of this analysis as to factors of safety obtained by each method. M. Popescu. Soil Mechanics and Foundation Laboratory. HRIS 63. ACTIVE

(41) Computer Studies of Thin Plates Loaded in their Plane. A study of the effect of nonsymetrical and uniform applied loads on plates. E. Buiu. Bridge Research Laboratory. HRIS 25. ACTIVE

(42) Studies of Stress Distribution in Box Girders of Steel Bridges under Bending and Torsion. To determine the stress distribution in a two-track railway bridge. I. Buca. O. Opran. Bridge Research Laboratory. HRIS 25. ACTIVE

(43) Concrete Highway Bridges Safety in the Probalistic Approach. Use of the theory of probability to develop real solutions for the problem of bridge safety under both live and dead loads. F. Burtescu. Bridge Research Laboratory. HRIS 25. ACTIVE

(44) Characteristics of Sulphur-Bituminous Binders. A laboratory study of the effects of sulphur on the physical, chemical and rheological properties of bitumens. S. Dorobantu. Road Research Laboratory. HRIS 31. ACTIVE

(45) Attempt to Recycle an Asphalt Highway. A laboratory study to assess the conditions of recycling the old asphalt pavement. S. Dorobantu. Road Research Laboratory. HRIS 40. ACTIVE

(46) Small City Traffic Survey. Studies of congestion and possible improvements in street size and distribution. S. Dorobantu, S. Jercan, C. Romanescu, I. Racanel. Road Research Laboratory. HRIS 54. ACTIVE

(49) Stability Analysis and Remedial Procedures for Excavated Slopes in Complex Geological Formations. Stability analyses of deep excavations in such formations as loess, active clays, limestone and chalk, performed by both classical limit equilibrium methods and finite element method, taking into account stress-strain and strength properties of the materials. I. Stanculescu, M. Popescu. Soil Mechanics and Foundation Research Laboratory. HRIS 62. COMPLETE

(51) Measurements of Contact Pressures between Soil and the Foundations of an Experimental Building. Study of a four-story building based on loessial collapsible soil. I. Stanculescu. C. Athanasiu. Soil Mechanics and Foundations Research Laboratory. HRIS 62. COMPLETE

(52) Measurements of Contact Pressures between the Soil and Raft Foundation for a Grain Silo. Measurements using friction type pressure cells. I. Stanculescu, C. Athanasiu. Soil Mechanics and Foundations Research Laboratory. HRIS 62. COMPLETE

(53) Investigation of the Use of Textile Drains to Accelerate the Consolidation of a Silty Clay Saturated Soil under an Access Embankment. To study the effectiveness of textile drains in an embankment founded on silty saturated clay. I. Stanculescu, C. Athanasiu. Soil Mechanics and Foundations Research Laboratory. HRIS 63. ACTIVE

a. Road Research Laboratory Transportation Faculty: Bdul Lacul Tei 124, 7000 Bucharest.

(3) Finite Element Method for Flexible Pavement Design. To develop a finite element program for stress analysis in these pavements. E. Sovarel. HRIS 24. ACTIVE

2. a. (4) A Constraint Circular Plate Model for Flexible Pavement Design. To investigate the suitability of this model for designing pavements. D. Badescu, S. Dorobantu. HRIS 24. ACTIVE

(5) Horizontal Steel Anchors. To determine the variation in capacity, displacement, contact pressure and friction stresses at different depths in clay and sand. C. Romanescu. HRIS 34. ACTIVE

b. Bridge Research Laboratory: Bdul Lacul Tei 124, 7000 Bucharest.

(1) Modern Methods for the Estimation of Planning Control of Railroad Construction and Maintenance. A study of management systems including relations between organization, information and costing systems. Fl. Dobrescu. HRIS 11. COMPLETE

(4) Stability of Plates with Ortogonal Stiffeners. To determine the theoretic basis for such checking. I. Buca. HRIS 25. ACTIVE

(5) Study of the Safety of Bridge Structures. R. P. Ionel, P. Stere, Al. Pasnicu. HRIS 25. ACTIVE

(6) Railway Steel Bridges. An analysis of the configuration of track girders of these bridges with long spans. I. Buca, I. Petrescu. HRIS 25. ACTIVE

(7) Torsional Analysis of Open Section Bridge Decks. I. Buca, G. Onu, O. Opran. HRIS 25. ACTIVE

c. Soil Mechanics and Foundation Research Laboratory: B-dul Lacul Tei, 124, 7000 Bucharest

(2) Hydric Properties of the Unsewed Textiles. Laboratory research and in-situ testing of the unsewed textile materials used as anticontaminant strata or as draining beds. S. Andrei, I. Petrica, V. Strunga. HRIS 34. ACTIVE

(3) The Influence of Soils Composition and State on Their Behavior. To develop a methodology for soil identification and description and for stocking the information regarding soil behavior when subjected to mechanical and/or hydrical changes. S. Andrei, C. Athanasiu. HRIS 61. ACTIVE

(4) Shear Properties of Clays. A study of the time effect on shear properties as applied to long term stability analyses of slopes, considering the shear deformability of sliding mass. I. Gh. Has. HRIS 61. ACTIVE

(5) Non-linear Winkler Model to Simulate the Interation Between Stiff Rafts and the Foundation Soil. A computer program to describe the reaction between contact pressure and the settlement of stiff rafts, considering the stress-strain characteristics of the soil and position of the contact point. C. Athanasiu. HRIS 63. ACTIVE

(6) Slope Stability Analysis Taking into Account the Progressive Mobilization of Shear Strength Parameters with Strain. Simulation in a slope stability analysis method of shear strength parameters and strains, enabling a factor of safety to be calculated. S. Andrei. HRIS 63. ACTIVE

3. POLYTECHNICAL INSTITUTE OF IASSY (Institutul Politechnic Iasi): Splai Bahlui 43, 6600 Iassy.

(1) Investigations on the Structural Index of Flexible Pavements. To study the possibilities of employing a modified AASHO deflection structural index to design flexible pavements. H. Zarojanu. Road Research Laboratory. HRIS 24. ACTIVE

3. (2) Technical Surveys Regarding Behavior of Some Asphaltic Lining with Artificial Aggregates. A study of some aspects of replacing natural aggregates with an artificial aggregate such as granulite for use with bitumens in road surfacings. H. Zarojanu, Z. Salinius. Road Research Laboratory. HRIS 35. ACTIVE

(3) Investigations Concerning the Use of Some Waste from Metal Working Industry for Hot Coatings. A study of the use of lime residue as partial substitute for filler and to determine optimum percentage to improve adhesiveness. Z. Saliniuc, Road Research Laboratory. HRIS 34. ACTIVE

(4) Research on the Use of Foundry Slag in Road Construction. A study of the use foundry slag for road construction, using slag deposited over a year's period. B. Cosoechi. Road Research Laboratory. HRIS 34. ACTIVE

(7) Use of Blast Furnace Slag. A laboratory and field study of the effects of water cooled and granulated blast furnace slag as sand in asphalt pavement. B. Cosoechi, N. Vlad. HRIS 34. ACTIVE

SOUTH AFRICA

Resurvey - 1980

Mrs. K. P. Gregg

The 1980 resurvey of road research in South Africa, reported by Mrs. K. P. Gregg, National Secretary of the South African Road Federation, lists 254 projects, 33 of them for the first time. Of the total, 23 are shown to be complete.

1. SOUTH AFRICAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH (C.S.I.R.):
P. O. Box 395, Pretoria, 0001

a. National Institute for Transport and Road Research: Same address.

(60) Optimum Design Methods for Flexible Pavements. A study of fundamental and practical developments relating to material properties, traffic, environment, construction, fatigue, in order to develop improved methods of pavement design. J. Maree. HRIS 24. ACTIVE

(61) Construction and Evaluation of Field Performance Experiments. Studies of the performance of selected pavements under accelerated traffic loading together with investigations of failures on existing "in service" rural and urban roads, including evaluation of the block paving experiment. M. Loesch. HRIS 24. ACTIVE

(62) Prediction of Pavement Temperatures. Measurements of the thermal properties of highway materials in seeking to find an easily applicable procedure for design purposes. R. H. Williamson. HRIS 24. INACTIVE

(63) Determination of Design Loading for Pavements. To determine traffic loading on pavements by means of the Axle Weight Analyzer (AWA) and the Vehicle Analog Classifier (VAC). Evaluate the AWA and VAC. J. Basson. HRIS 24. ACTIVE

(64) Methods to Assess Pavement Condition and Maintenance Needs. An investigation of factors influencing roadriding qualities together with limiting criteria for road maintenance considering traffic, environmental effects and structural condition. P. C. Curtayne, R. G. Gordon. HRIS 24. ACTIVE

(65) Methods of Design of Pavement Rehabilitation. To investigate the cause of traffic-induced surface cracking in asphalts and determine methods of reducing its occurrence. M. Grant. HRIS 24. ACTIVE

(66) Methods for Sampling and Control of Road Construction. Collection of cost data on the variability of parameters in order to improve the effectiveness of quality control measures and in the drafting of specifications; investigate labor intensive methods of construction. C. Semmelink, W. Brink. HRIS 33. ACTIVE

(67) Use of Precoated Stone in Surface Treatments. Studies of methods of precoating aggregates and the evaluation of these aggregates in surface treatments together with development of techniques of resealing roads carrying heavy traffic. A. T. Visser. HRIS 40. INACTIVE

(68) Concrete Pavements. To improve design, construction and maintenance practices for concrete pavements. C. J. Semmelink. HRIS 24. ACTIVE

(71) Pedocretes. To determine the criteria and limiting values relevant to the specification and use as roadbuilding materials of: calcretes, laterites and ferricretes. F. Netterberg. HRIS 35. ACTIVE

1. a. (73) Terrain Evaluation and Data Storage. A practical demonstration of the use of data storage in the preparation of soil engineering maps. F. Netterberg. HRIS 61. FUTURE

(74) Earth and Rock Structures and Cuttings. Development of methods of design. construction and performance evaluation of highfills. deep cuts and subgrades of roads. P. Paige-Green. HRIS 33. ACTIVE

(75) Moisture Effects in and Under Roads. To investigate the short-and long-term variations of moisture in and under pavements and relate these to material strength and pavement behavior. F. Haupt. HRIS 62. ACTIVE

(76) Methods to Control the Effect of Moisture in and Under Road Pavements and in Deep Profiles. Evaluation of existing methods of limiting ingress of moisture into road foundations and to find new methods of providing drainage of the foundation and subgrade. M. C. Grant. HRIS 63. ACTIVE

(77) Bituminous Binders. Investigations to improve and evaluate the properties of bituminous binders including the preparation of specifications. A. C. Edler. M. M. Hattingh. HRIS 31. ACTIVE

(78) Behavior of Pavement Materials. To characterize and evaluate the behavior of granular materials and subgrade soils and of asphalt mixes and develop design parameters to correlate with pavement performance. J. Maree, M. Grant. A. Viljoen. HRIS 31. ACTIVE

(79) Engineering Properties of Cementitious Stabilized Materials. Laboratory and field studies of stress-strain properties of lime-treated bases and subbases of asphalt pavements. together with a determination of the effect of mix variables on shrinkage. tensile strength. strain of break and elastic moduli of rock bases. and recommendations for tentative material and construction specifications. C. P. Marais. HRIS 62. ACTIVE

(81) Road and Transport Statistics. Collection. analysis and publication of road transport data for Southern Africa. including goods haulage data. P.N.W. Freeman. HRIS 11. ACTIVE

(82) Relationship of Road Transport Costs and Road Costs. To provide information which will permit recommendations to be made on the economic justification of increasing axle load limits. Study road user payments and revenue sources for financing roads. P. Freeman. HRIS 15. ACTIVE

(83) Road Planning-the Economic Justification of Road Projects and Road Financing. Recommendations regarding methods and techniques of road planning including economic justification and methods of financing. P. Freeman. HRIS 15. ACTIVE

(86) Methods of Data Acquisitions and Analysis. Investigate methods of obtaining traffic and accident data. and analyzing accident data. B. Fernie & E. De Beer. HRIS 51. ACTIVE

(88) Road Safety Statistics. Organization of the procurement of accident data and the analysis of accident and other data to produce road safety statistics. J. Bron. HRIS 51. ACTIVE

(89) Effectiveness of Road Safety Measures. The application of statistical methods to evaluate the effectiveness of road safety measures and fuel conservation measures. P. De Jager. B. Fernie. HRIS 51. ACTIVE

(91) Pedestrian Behavior. Determination of methods of improving the road behavior of pedestrians. P. W. Nel. HRIS 52. ACTIVE

SOUTH AFRICA (contd)

1. a. (92) Alcohol Drugs and Driving. A comprehensive survey of relevant literature on the effect of alcohol on driver and pedestrian behavior. together with determination of the extent of the problem through tests on samples of all drivers and on road accident casualties within a selected area. S. H. Pieterse. HRIS 52. ACTIVE

(94) Accident Case Studies. A study of selected accident cases to determine factors contributing to road accidents. together with identification of factors needing research. J. R. Odendaal. HRIS 51. ACTIVE

(95) Law Enforcement Equipment and Methods. Provision of information for use in road safety research and on instruments and methods to assist law enforcement. T. Botha. HRIS 51. ACTIVE

(96) Influence of Geometric Design and Roadside Features on Road Safety. Identification of road features contributing to accidents; define standards and warrants for safe road conditions. including preparation of standards for pedestrian and cycle facilities. A. Jobson. R. Fieldwick. HRIS 21. ACTIVE

(97) Influence of Road Surface on Road Safety. Investigate the skid resistance of road marking materials. A. T. Visser. R. G. Gordon. HRIS 24. INACTIVE

(99) Pedestrian Safety Measures. Determination of factors contributing to pedestrian accidents. together with preventive measures. in order to reduce occurrence to an acceptable level. J. A. deRaadt. HRIS 51. ACTIVE

(100) Accelerated Trafficking of Roads. Conduct controlled trafficking on pavements using Heavy Vehicle Simulators (HVS) and determine the optimum use of natural materials. asphalt and concrete pavements in various South African environmental areas. B. Shackel. J. Basson. HRIS 24. ACTIVE

(104) Methods of Rural Traffic Counting. Recommend improved rural traffic counting procedures for South Africa and of J. de B. Joubert. HRIS 55. ACTIVE

(106) Goods Traffic in Urban Areas. Make Policy Recommendations Regarding Goods traffic in urban areas. B. Gorton. HRIS 12. ACTIVE

(107) Analysis of Road Safety System. Improvement of road safety management through coordinated systems approach including construction of a model of the national road safety system. B. Fernie. HRIS 51. ACTIVE

(108) Accident Emergency Response System. Survey of methods employed in various countries for dealing with road accidents involving injury; evaluation of South African emergency response systems; recommend improvements. W. N. van Kralingen. HRIS 51. ACTIVE

(109) Effect of Road Surface Properties on Users and Vehicles. Literature Survey on methods of limiting spray and noise. improving light reflectance. demarcating traffic lanes. and tire wear by modifying surface properties. A. T. Visser. HRIS 24. INACTIVE

(113) Influence of Traffic Control Features on Road Safety. Investigation of traffic signs. markings. rumble devices and lighting. so as to improve safety of existing road system. HRIS 54. ACTIVE

(114) Vehicle Features Contributing to Accidents and Casualties. Investigation of vehicle design and maintenance factors that contribute to accidents and influence severity. G. Kinsey. C. Laurence. D. Von Wielligh. HRIS 53. ACTIVE

(115) Vehicle Safety Standards. Review and prediction of cost effectiveness in South Africa of various overseas vehicle safety standards. G. Kinsey. HRIS 53. ACTIVE

1. a. (116) Safety Related Motor Vehicle Equipment, Standards and Practice. Investigate specific vehicle design, maintenance and usage aspects; predice cost effectiveness and recommend improved standards or legislation. G. Kinsey, W.H.J. Sator. HRIS 53. ACTIVE

(117) Traffic Legislation and Court Procedures. Analysis of South African road traffic legislation and its effect on attitudes of community, courts and enforcement officials. T. J. Botha. HRIS 51. ACTIVE

(118) Transportation Planning Procedures. Development of procedures for preparing urban transportation plans. C. G. Wilmot. HRIS 12. ACTIVE

(119) Urban Transport Impact Models. Develop simple model to evaluate the effectiveness of proposed urban transportation policies. HRIS 11. ACTIVE

(120) Data for Urban Transportation Planning. Identify the needs of and the operational requirements for a National Travel Data Centre. Determine public transport elasticities and private vehicle elasticities in various metropolitan areas. R. Sweet. HRIS 12. ACTIVE

(121) Relationship Between Urban Form and Transportation. Study of the interaction between transportation facilities and urban growth and development to provide basis for forecasting travel demand. J. Cameron F. Price. HRIS 13. ACTIVE

(122) Performance of Transportation Systems. Develop guidelines on the role of various systems and technologies in meeting the transport requirements emerging from different land uses, urban forms, density and other physical characteristics. HRIS 15. INACTIVE

(123) Bus Priority Lanes. Recommend a method for evaluating the performance of bus priority lanes. A. Tomecki. HRIS 11. ACTIVE

(124) Bus Ridership Marketing Strategies. Investigation of means of increasing bus ridership, including improved operating efficiency and quality of service. A. J. Falk, P. Browning. HRIS 11. ACTIVE

(125) Bus Subsidies. Investigate economic basis and justification of subsidies and prepare guidelines for subsidy management. A. Van Der Reis, N. Morris. HRIS 15. ACTIVE

(126) Satellite Commuting. To make recommendations for improving public transport services for blacks, colored and Asians. G. S. van der Walt. HRIS 11. ACTIVE

(127) Parking Policies. Prepare guidelines on parking policies and management. V. Skutil. HRIS 54. ACTIVE

(128) Application of Microprocessors to Traffic Signalization. Improve traffic flow by better traffic signalization, particularly through the application of microprocessors. A. Ernyes. HRIS 54. ACTIVE

(129) Traffic Flow Simulation Model. Development of a simulation model for assessing effectiveness of measures proposed to improve traffic flow. D. F. Gorton. HRIS 55. ACTIVE

(130) Urban Traffic Engineering. To make recommendations for improving the performance of urban non-signalized intersections. D. F. Gorton. HRIS 54. ACTIVE

(131) Evaluation of Construction Techniques. Investigation of problems with surface treatments for newly constructed roads, such as warrants for paved shoulders, methods of laying bases, etc. A. Parrock. HRIS 33. ACTIVE

1. a. (132) Road/Rail Comparative Cost Study. Estimation of full cost of road transportation including truck operating, road track, and social costs. F. P. Cillie, N. Bennie, P.N.W. Freeman. HRIS 15. ACTIVE

(133) Organizational Structure of Transportation. To identify the organizational framework of urban and rural transportation in South Africa. HRIS 11. ACTIVE

(134) Abnormal Loads - Traffic Aspects. To investigate traffic congestion caused by and control of traffic in vicinity of abnormal loads, prepare manual of transportation of superloads and assist in selection of routes for moving such loads. HRIS 55. ACTIVE

(135) Development of Optimum Geometric Standards. Determine the effects of changes in geometric and structural standards on the costs of pavement construction and maintenance. C. Bester, R. Sik, W. Brink. HRIS 12. ACTIVE

(136) Urban Transport Cost Data. To estimate costs of urban traffic congestion and develop methodology for evaluating time savings. HRIS 15. ACTIVE

(137) Usage Rate of Seatbelts. To determine the average usage rate of seatbelts. P. De Jager. HRIS 51. ACTIVE

(138) Study of Road Surface Reflective Properties. To determine and recommend average reflective properties to be used in the design of lighting. R.F. Del Mistro, W. Sator. HRIS 24. ACTIVE

(139) Influence of Speed on Accidents. Literature survey and feasibility study of accident data from selected road sections. H. B. Pretorius. HRIS 51. ACTIVE

(140) Roadworthiness. Investigate the role of unroadworthiness of commercial and private vehicles as a cause of road accidents. G. Kinsey. HRIS 53. ACTIVE

(141) Coordination of Regulations and Practices for the Conveyance of Hazardous Materials by Road. Investigate local practice and regulations and determine where need for improvement lies. Recommend necessary uniform country-wide regulations. J. Hillman. HRIS 51. ACTIVE

(142) Development of Systems for Planning Maintenance Needs and Priorities and the Management of Pavement Data. Establish criteria and methodology for evaluating pavements for road needs studies and develop pavement management systems. P. Curtayne, T. Scullion. HRIS 40. ACTIVE

(143) Determine the Most Suitable Plant for the Compaction of Road Materials. Evaluate the use of compaction equipment for the construction of embankments and selected pavement layers. J. M. Clifford. HRIS 41. ACTIVE

(144) Construction over Expansive Subgrades. To assess the merits of the various techniques proposed for overcoming heave problems and define recommended practices; establish simple method for recognizing potentially expansive soils. D. J. Weston. HRIS 33. ACTIVE

(145) Futures Research: To assess medium long-term and economic changes in road, rail and air transport. D. Van Der Ryst. HRIS 13. ACTIVE

(147) Superloads. Assessment of the effect on existing bridges of loads up to about 550,000 kg. (Update user manuals and program documentation. Insertion of prestress and thermal effects into beam and hybrid plate programs.) M. A. G. Duncan, S. Davis, R. Williams. HRIS 25. ACTIVE

(148) Modification with Cement and Lime. Investigation of modification with cement and lime for economic road construction. F. Netterberg. HRIS 33. ACTIVE

1. a. (149) Engineering Properties of Tar-bound Materials. Investigation of the properties of such materials with particular reference to bases and sealed tar premix surfacings, and to establish properties of cold tar mixes for use in bases, shoulders and patches. A. J. Brady. HRIS 34. ACTIVE

(150) Seat Belt Usage. Determination of the wearing rate, the effectiveness and injury production. H. B. Pretorius. HRIS 53. ACTIVE

(151) Licensing Procedures. To draw up practical tests for drivers of various types road vehicles, including heavy and light trucks, motor cycles. J. S. Du Toit. HRIS 51. ACTIVE

(152) Influence of the Layout of the Road Network on Road Safety. To determine the payout features which contribute to accidents on local streets in residential areas and propose guidelines for residential road networks. R. Del Mistor. HRIS 21. ACTIVE

(153) Improvement of Pedal and Motor Cycle Features. To investigate cycle design, maintenance and usage aspects, with particular reference to increased conspicuity. W. H. J. Sator. HRIS 53. ACTIVE

(154) Soil and Aggregate Test Methods. To improve the accuracy, precision, inter-laboratory precision, and correlation with road performance of the standard soil and aggregate test methods. K. Clauss, P. Paige-Green. HRIS 61. ACTIVE

(155) Bus Operations. To recommend appropriate techniques for public transport scheduling. I. Morton. HRIS 11. ACTIVE

(156) Training in Bus Operations. Investigation or means to improve the training efficiency and effectiveness of bus companies. C. J. Pyle. HRIS 11. ACTIVE

(157) Cracking. To evaluate the importance of non-traffic associated road cracking, the mechanisms involved, preventive measures and crack sealants. D. J. Weston. HRIS 34. ACTIVE

(158) Waste and Byproducts. To investigate resources of, and ways of using waste and byproducts in road construction. K. A. Clause. HRIS 34. ACTIVE

(159) Traffic Noise. To investigate the extent of the noise problem adjacent to freeways and major roads, suggest countermeasures, and recommend noise level prediction methods and targets for different land uses. R. Fieldwick. HRIS 17. ACTIVE

(160) Bus Safety Standards. To assess the need for improved occupant protection and investigate possible design improvements of structure and interior equipment. L. Barltrop. HRIS 53. ACTIVE

(161) Organization and Structure of Bus Transport. Analysis of present organizational problems in bus transport, including legislative systems governing public transport. I. Morton. HRIS 11. ACTIVE

(162) Park-and-Ride. Investigate factors that determine the success of park-and-ride and kiss-and-ride projects. A. J. Falk. HRIS 12. ACTIVE

New Projects

(163) Mudrocks. Determine the criteria and limiting values relevant to the specification and use of mudrocks as roadbuilding materials. J. Venter. HRIS 34. ACTIVE

New Projects

1. a. (164) Sandstones. Determine the criteria and limiting values relevant to the specification and use of sandstones as roadbuilding materials. P. Paige-Green. HRIS 34. ACTIVE

(165) Compaction of Road Construction Materials. Determine the most suitable plant for compaction of road materials. HRIS 41. INACTIVE

(166) Effects of Axle Group Loadings on Highway Bridges. Simulation movements of typical vehicles and evaluate stresses in sample bridges and preparation of load tables. K. Rassalski. HRIS 25. ACTIVE

(167) Bridge Design Programs. Adapt GSC programs for use with new South African highway bridge loading specification. M. Duncan. HRIS 25. ACTIVE

(168) Bridge Maintenance. Review current practices and current design standards with a view to reducing costs and prepare for possible damage to structures. J. Vermooten. HRIS 40. ACTIVE

(169) Road Cost Data. To estimate road accident costs in South Africa and motor vehicle running costs under South African conditions; collection and analysis of road construction and maintenance costs. J. Goosen. P. Freeman. HRIS 15. ACTIVE

(170) Urban Transport Costs. To develop cost data files pertaining to urban passenger transport and traffic congestion data. W. Pienaar. P. Freeman. HRIS 15. ACTIVE

(171) Road Pricing. To study road pricing techniques. S. Fourie. HRIS 15. ACTIVE

(172) Road and Transport Investment. To investigate the evaluation procedures in road and transport investment decisions and the economic effects of changes to transport system characteristics. I. Schutte. HRIS 15. ACTIVE

(173) Fuel Savings. To investigate vehicle fuel savings achievable in urban areas and the efficiency of fuel utilization in the transport section and study the relation between user behavior and fuel price changes. F. Jurgens. HRIS 17. ACTIVE

(174) Countrywide Road Planning. To recommend methodology for determining rural road needs on a national basis. J. Baxa. C. Smuts. J. de B. Joubert. HRIS 12. ACTIVE

(175) Geometric Standards for South African Roads. To develop optimum geometric standards and specify the consequences of the use of various geometric standards. C. Bester. HRIS 24. ACTIVE

(176) Transport Planning Techniques - Modal Choice. To select and if necessary develop a technique for estimating values of time and use it to undertake a value of time study. P. Barlow. HRIS 12. ACTIVE

(177) Transport Planning Techniques - Public Transport. To develop techniques for analyzing and predicting the performance of public transport and establish TRANSEPT program on local computing facilities. F. Olivier. HRIS 12. ACTIVE

(178) Transport Planning Techniques - 'Non-White' Transport. To identify and describe black transport problems in a metropolitan complex and identify strategies for developing solutions on a national scale. N. Morris. HRIS 12. ACTIVE

b. National Building Research Institute: Same address.

(8) Research on Expansive Soils. Influence of various factors affecting heaving of expansive soils. H. Loew. HRIS 63. (Citations) ACTIVE

SOUTH AFRICA (contd)

1. b. (10) Engineering Effects of Fissuring in Clays. To study the effect of fissuring on stress within the soil and on bearing capacity and slope stability. A.A.B. Williams. HRIS 63. (Citations) ACTIVE

(11) Research on Expansive Soils: Horizontal Forces on Retaining Walls. To determine the pressures on retaining walls exerted by a soil which swells when wet. HRIS 63. INACTIVE

(12) Residual Soils: Study of Soil Properties. An investigation of the properties and behavior of residual soils. HRIS 61. INACTIVE

4. CAPE PROVINCIAL ADMINISTRATION ROADS DEPARTMENT: P. O. Box 2603, Cape Town

(2) Rehabilitation and Reconstruction of Main Roads. Improvement of geometric standards and replacement of thin bituminous surfacing with bituminous premix surfacing. J. M. Hoffman. HRIS 40. ACTIVE

(3) Investigate the Effect of Abnormally Heavy Loads on Embankments and on Underground Services and Structures. D. Rose. HRIS 62. ACTIVE

5. NATAL ROADS DEPARTMENT: Materials Division, Private Bag 9043, Pietermaritzburg, Natal 3200

(3) Loadometer Survey of Heavy Vehicles. Loading study for use in improving pavement designs. T. Mackey. HRIS 55. INACTIVE

(5) Stabilization of Base and/or Subbase to Reduce Deflection Under Traffic. Cement and lime stabilization of bases to reduce resilience and resulting surface cracking. J. Savage. HRIS 62. INACTIVE

(7) Accident Records Required for Identifying Black Spots with Special Reference to Electronic Data Processing. Use of monthly lists of 10 worst 2 km sections including intersections and the 10 worst intersections in electronic data processing to determine accident "black spots". T. C. Mackey. HRIS 51. INACTIVE

(8) Axle Weight Analyzer Survey. Analysis of axle weights by use of a portable pad in which change in capacitance of electrical elements is taken to be a measure of live loads, with classification into "mass groups" by a battery-operated classifier. J. Savage, I. Mitchell. HRIS 55. INACTIVE

(9) Full Scale Experimental Anti-Skid Surfacings. Use of an open-graded hot mix (3/4 in) in a 75 km section to test its anti-skid qualities, the results showing good skid resistance, reduction in spray and light reflection and less tire noise. J. Savage. HRIS 24. INACTIVE

New Project

(10) Determination of Suitable Geofabrics for Various Applications in Road Construction. To determine the strength, stretch, puncture resistance and permeability characteristics of the various makes and grades of geofabrics for use in road construction applications. J. Savage, F. Mostert. HRIS 34. ACTIVE

6. TRANSVAAL PROVINCIAL ADMINISTRATION ROADS DEPARTMENT: Provincial Building, Church Street, Pretoria.

(9) The Pretoria-Witwatersrand-Vereenining Major Road Network Investigation. An investigation of the requirement for a major road network for a future span of 50 years. Consultants. HRIS 13. ACTIVE

7. CAPE TOWN CITY COUNCIL: Gallows Hill Road, Cape Town

a. Traffic Control Branch: Same address.

(1) The Effect of Traffic Law Enforcement on Fatal Accidents. Study of results from increased numbers of traffic police. J. P. O'Connor. HRIS 51. ACTIVE

(2) Accident Maps and Their Use. Study of "black spots" to identify remedial action required. R. T. Balharry. HRIS 51. ACTIVE

(3) Pedestrian-Operated Red Flashing Lights at Zebra Crossings. Tests of experimental flashing red lights as replacements for pedestrian-operated mid-block 4-unit heads (red, green, amber and pedestrian) which flash only when the pedestrian button is pressed. J. P. O'Connor. HRIS 54. ACTIVE

(4) Monitoring Traffic Speed by the Floating Car Method. A weekly peak hour monitoring program to provide background information for dealing with complaints and knowledge of delays which actually occur. Staff. HRIS 54. ACTIVE

b. City Engineer's Department: P. O. Box 1694, Cape Town

(2) Transport Study for Cape Town and Environs. (Cape Metropolitan Transportation Study). A transport study to provide the basis for forward planning for the period after 1990 A. D.; i.e., after the execution of schemes already approved and proposed for 1985-1990. Staff. HRIS 13. COMPLETE

(3) Transport Facilities for a New Town. Planning of arterial roads and rail and bus services to link a new town, which will house a quarter of a million people, with the existing radial freeway system and the central area of Cape Town. Staff. HRIS 12. COMPLETE

(4) Foreshore Freeway in Cape Town. Planning of a 3.5 km elevated highway to provide a by-pass for the center of Cape Town and a "terminal facility" for the existing 4 freeways and to distribute traffic to the city streets and peripheral parking garages. Staff. HRIS 12. ACTIVE

(6) Vanguard Drive: Planning of Freeway Facility from Lansdowne Road to Voortrekker Road. Traffic assignment, conceptual planning and functional design of this drive to upgrade the route from a single carriageway two-lane arterial to a 6-to 8-lane divided freeway. First construction phase being implemented. HRIS 21. COMPLETE

8. DURBAN CITY COUNCIL: P. O. Box 1014, Durban, Natal

b. City Engineer's Department: P. O. Box 680, Durban, Natal

(2) Road Marking in Durban. Tests of various types of striping to determine most durable and best method of application. Local Staff. HRIS 34. ACTIVE

(3) Accident Investigations. Identification and study of "black spots" to determine corrective action. City Engineer's Staff. HRIS 51. ACTIVE

(8) Siting of Traffic Signals. To determine proper placement of signals for complete visibility by drivers to reduce high incidence of accidents. Departmental Staff. HRIS 51. ACTIVE

(9) Route Marking Study for the Durban Metropolitan Area. To develop a marked route through cities to avoid congested areas and intersections. Departmental Staff. HRIS 54.

(10) Durban Transportation Plan. Updating of current data provided by consultants by making up-to-date traffic studies including cordon counts, and origin-destination surveys. Departmental Staff. HRIS 55. COMPLETE

8. b. (11) Vehicle and Pedestrian Behavior in Durban. By means of cine camera and spaced street markings, speeds, headways and queue lengths pedestrian and traffic services will be studied. Departmental Staff. HRIS 55. COMPLETE

(12) Centralized Traffic Control System. A computer controlled system having a library of 15 programs, the program for use being selected on the basis of information received from loop detectors and augmented by TV surveillance during peak hours. Staff. HRIS 54. COMPLETE

9. JOHANNESBURG CITY COUNCIL: Johannesburg

a. City Engineer's Department: P. O. Box 4323, Johannesburg.

(9) Public Transport Update to the Greater Johannesburg Area Transportation Study. To update public transport patronage estimates for 1985 and 2000. Staff. HRIS 13. COMPLETE

(10) Johannesburg Metropolitan Transportation Study. A land-use/transportation study for the city and its surrounding 8 municipalities. Staff. HRIS 15. ACTIVE

(11) Parking Study. Surveys and inventories of on-and off-street parking as an aid to development and implementation of a parking strategy. Staff. HRIS 54. ACTIVE

(12) Bus Priority Studies. Studies of short-term bus improvements and priorities. Staff. HRIS 11. COMPLETE

(13) Shopping Study. Study of the existing structure and future shopping requirements of the city. Staff. HRIS 13. ACTIVE

(14) City Centre Study. Study of the structure of the city center and the human activities it possesses and lacks. Staff. HRIS 15. COMPLETE

(15) Pedestrian Study. Study of pedestrian flows and characteristics and future pedestrianization requirements. Staff. HRIS 52. COMPLETE

(16) Land Use Inventory. To develop a land-use data bank for the city. Staff. HRIS 13. ACTIVE

(17) Flat Study. Study of high density dwelling units in existance, their characteristics and future requirements. Staff. HRIS 13. ACTIVE

(18) Paratransit Study. Study of short term transport improvements employing car pools, lift clubs, taxis, minibuses, etc. Staff. HRIS 13. ACTIVE

(21) Highway Priority Ratings. To determine weight factors for new and existing highways so that reliable benefit cost ratios may be obtained to rate priorities. G. A. Grant, J. D. Sampson. HRIS 15. (Citations) COMPLETE

(22) Bend Index Safety Indicator. An investigation into safe speed on urban curves measuring comfort, superrelevation and road surface friction. G. A. Grant, D. G. Skinner. HRIS 21. ACTIVE

(23) Premix Tests. To test surfacing mixes using low volitile tars in association with gap graded mixes. H. J. Beckett, V. E. Hansel. HRIS 31. (Citations) ACTIVE

(24) Accident Rate. To determine the variations in accident rate at urban traffic light controlled intersections having different approach geometry. G. A. Grant, D. G. Skinner. HRIS 51. (Citations) INACTIVE

9. a. (25) Microprocessors. To evaluate performance in the field of microprocessors used as traffic light controllers at complex intersections. G. A. Grant. J. D. Sampson. HRIS 54. (Citations) ACTIVE

(26) Loop Detectors at Complex Intersections. To examine the effectiveness and location of up to 30 loop detectors at an intersection in order to determine all the relevant traffic engineering parameters. G. A. Grant J. D. Sampson. HRIS 54. (Citations) ACTIVE

(27) Evaluation and Testing of TRANSYT. To examine the sensitivity of TRANSYT to small changes in variable such as cycle time, capacities volumes and stop weighting. G. A. Grant. J. D. Sampson. HRIS 54. COMPLETE

(28) Traffic Volumes. To obtain comprehensive traffic volume data in the Johannesburg area in order to calculate growth trends and weekly variations. G. A. Grant. J. D. Sampson. HRIS 55. (Citations) ACTIVE

(29) Bus Priorities. To investigate the several bus priority schemes for Johannesburg including with-flow and contra-flow lanes and separate right-of-way for buses. B. L. Carlsson. S. N. Horwitz. HRIS 11. (Citations) COMPLETE

11. UNIVERSITY OF CAPE TOWN: Rondebusch 7700. Cape.

a. Department of Civil Engineering: Same address.

(10) Tests on Seating Ribs of Prestressed Concrete Bridge Beams. Ten-foot long beams (one-third full size) are being tested to determine strength of drop-in beam seating with various types of reinforcing and prestressing. M. O. DeKock. HRIS 25. ACTIVE

(12) Void Formers for Hollow Slab Bridge Decks. A design study to achieve optimum weight-saving concrete bridge decks. M. O. DeKock. HRIS 25. INACTIVE

(13) Design of Flat Concrete Slabs for Structures. Experimental analysis is being used and numerical analyses are being examined. W. S. Doyle. HRIS 25. ACTIVE

(19) Trip Generation Analysis Techniques. An investigation of the unit of analysis most suitable for the development of residential trip generation models and a comparative evaluation of the least-squares and category analysis methods. E. I. Pas. HRIS 55. ACTIVE

(20) Latent Demand for Urban Transportation. An investigation of latent demand for transportation in urban areas of South Africa--particularly Cape Town. E. I. Pas. HRIS 13. ACTIVE

(21) Behavior of Reinforced and Prestressed Concrete Beams Subjected to Dynamic Disturbance. An investigation of the possible instability of concrete beams at loads slightly less than the ultimate static load. B. J. Mackenzie. HRIS 25. ACTIVE

(23) Space Frame and Grid Analysis Methods. To investigate the comparative economics of space structures versus conventional plane structural components. W. S. Doyle. G. Howell. HRIS 25. ACTIVE

(24) Box Girder Bridges and Folded Plate Structures. Investigation of a finite strip method of analysis for these structures. W. S. Doyle. R. Barker. HRIS 25. ACTIVE

11. a. (25) Multiple Least-Squares Regression Calibration of a Gravity Model of Trip Distribution. To develop a model to overcome certain shortcomings in the application of traditional methods to the conditions in South Africa. M. A. Todes. E. I. Pas. HRIS 55. ACTIVE

12. UNIVERSITY OF NATAL: King George V Avenue. Durban

b. Department of Civil Engineering: Same address.

(1) Compaction and Behavior of Windblown Sands and Soils of Low Compacted Density. Effect on road surface deformation. K. Knight. HRIS 24. ACTIVE

(10) Effects of Design Speed on Earthwork Quantities. Studies of 4 one-mile length sites with determination of earthwork quantities for various widths and design speeds at each site. T. H. Bennett. HRIS 21. ACTIVE

(11) Regional Aspects of Skid Resistance in a Subtropical Coastal Environment. Studies of the skid resistance of existing road surfaces with particular attention to the effects of variations in traffic. climate. road stone type. and seasonal changes. B. K. Turner. HRIS 24. ACTIVE

(12) Factors Affecting Accident Rates. Comprehensive tests of some 4.000 drivers. including statistical analysis of vision and perception reaction time tests. in order to determine if driver defects in certain groups can be isolated. and whether or not accident rates are related to road type road surface or level of traffic. T. H. Bennett. HRIS 51. ACTIVE

(13) Relationship between Road Geometry and the Speed Change Cycles of Vehicles. To determine the effects of road curvature and rise and fall on vehicle speeds. centered on total curvature and total rise and fall. rather than on individual curves or gradients. T. H. Bennett. HRIS 21. ACTIVE

(14) Economic Standards for Urban Roads. A study of the effects of vehicle speeds and accident rates of very steep gradients. very sharp curves. very narrow lanes and poor sight distance. T. H. Bennett. J.P.L. Janse van Rensburg. HRIS 21. ACTIVE

(16) Skidding Resistance of Road Surfaces. To arrive at means of assessing quickly the long term skidding properties of road surfacing materials and determine seasonal and long term patterns of variations in the resistance. K. Knight. B. K. Turner. HRIS 24. (Citations) ACTIVE

(17) Warrants for Climbing Lanes. To estimate the savings in operating and time costs resulting from the addition of an extra lane for heavy vehicles. and carrying out cost benefit analyses. T. H. Bennett. HRIS 54. ACTIVE

(19) Optimizing the Operation of Urban Railways. A study of the effects on operation of the spacing of stations. frequency of trains. loading and off-loading passengers and minimum working headway. and the improvements in operation that may be effected by varying these parameters. A. J. Louw. HRIS 11. ACTIVE

13. UNIVERSITY OF PRETORIA Civil Engineering Department. Hillcrest. Pretoria. 0001

(5) Granular Materials in Road Foundations. An investigation into the properties of granular materials used in road pavements in respect to particle and mixture properties. P. F. Savage & Students (In Cooperation with Institute of Road Research. S. A. Council for Scientific & Industrial Research). HRIS 35. ACTIVE

13. (7) Properties of Graded Crushed Stone Paving Layers. A literature review and laboratory studies on the effects of type of rock, crystal structure, shape, hardness and surface texture of crushed material, and grading, on the behavior of selected crushed stone in road pavements. P. F. Savage. HRIS 24. ACTIVE

(9) Traffic Characteristics of Various Land Uses. Surveys to determine trip generation and parking characteristics at various South African land uses. H. Switala. HRIS 15. ACTIVE

(10) Vehicle Characteristics Data Bank. Vehicle characteristics stored in a computer based data bank and extracted for traffic engineering purposes. P. Joidaan, S. C. van As. HRIS 53. ACTIVE

(11) Optimization of Highway Vertical Alignment. To develop a computer program to facilitate the optimization of vertical alignment of roads. H. Switala. HRIS 21. ACTIVE

(12) A Study on the Crushing of Stone Aggregates. To predict the frequency distribution of crushed rock of different types and a simple crushing procedure to produce a given grading of base material. P. F. Savage. A. Retief. HRIS 35. ACTIVE

(13) The Stress-Strain Relationships for Some South African Stone Types used in Crusher Run Pavement Layers. To establish values for K_1 and K_2 in the relationship between the resilient modulus and stress at various densifications, gradings and particle shape. P. F. Savage. A. J. J. van Rensburg. HRIS 35. ACTIVE

(14) The Capacity of Urban Signalized Intersections. To determine through flow capacities under varying demand and left and right turn percentages. P. W. Jordan. HRIS 54. COMPLETE

(15) Passing Sight Distance Requirements and Warrants for South African Roads. To evaluate the present practice against possible new requirements due to speed restrictions and less powerful automobiles. A. J. Papenfus. HRIS 54. COMPLETE

(16) Goods Movement Demand Models. To develop urban goods movement models for trip attraction for cities. D. J. E. van der Merwe. HRIS 55. ACTIVE

(18) The Rapid Assessment of the Stability of Slopes in Granular Materials. To establish a rapid-read-off chart for stability of slopes under all conditions of the pore pressure. P. F. Savage. HRIS 62. ACTIVE

(20) Capacity and Systems Analysis of Mass Transit Modes. To develop a theoretical approach for determining the capacity of mass transit modes, including investigation of infrastructure and operating costs. J. J. P. van der Voort. HRIS 12. ACTIVE

(21) Vehicle Following Behavior of South African Motorists. The use of various methods of observations to develop a mathematical model that would explain this behavior, and then to recommend desirable procedures that would be safe under various conditions. S. C. van As. P. Jordaan. HRIS 55. COMPLETE

New Projects

(22) The Use of Public Transport in Urban Areas in South Africa. To study the demand for public transport, characteristics of users and aspects of supply. H. Switala. HRIS 16. ACTIVE

New Projects

13. (23) Optimization of Road Vehicle Fuel Consumption in Urban Areas. To develop methods, criteria and warrants that will assist traffic planners in determining the optimum use of fuel consumption in urban areas. P. Jordaan. S. C. van As. H. Joubert. HRIS 17. ACTIVE

(24) Prediction of Rural Road Traffic Demand. To establish and calibrate models to be used in predicting the traffic demand on rural roads. P. Jordaan. HRIS 13. ACTIVE

14. UNIVERSITY OF STELLENBOSCH: Stellenbosch. Cape Province

a. Transport Research Center: Same address.

(8) Transport Planning in Developing Regions. Appraisal of transport planning in developing areas of Southern Africa, including evaluation of advantages of transport integration between existing political entities and transport implications arising from creation of new independent states. B.C. Floor. HRIS 12. ACTIVE

(9) Transport of Indigent Patients to Hospitals. A cost-effectiveness study of a system whereby indigent out-patients are transported by taxi at hospital expense between homes and hospitals. B. C. Flood. HRIS 16. COMPLETE

New Projects

(10) Transport Costs in Rural Areas. A study of the impact of transport costs on rural development. B. Floor. J. Snyders. HRIS 15. ACTIVE

(11) Fuel Consumption for Road Transport. A study of the purposes for which fuel is used in road motor vehicles in South Africa. B. Floor. HRIS 17. ACTIVE

b. Civil Engineering Department: Same address.

(10) Influence of Geometric Road Design on the Construction Industry. HRIS 11. ACTIVE

(11) Influence of Design Parameters on the Construction Industry. HRIS 11. ACTIVE

(12) Optimal Road Alignments in South Africa. HRIS 21. INACTIVE

(13) Properties of Drum-mixed Asphalt. HRIS 31. ACTIVE

(14) Management of Civil Engineering Construction Equipment. HRIS 33. ACTIVE

(15) Basic Traffic Signal Design. HRIS 54. COMPLETE

New Projects

(16) Investigation into Cracks in Thin Asphalt Pavements. F. Hugo. HRIS 24. ACTIVE

(17) Mechanistic Design of Railway Pavement Structures. J. Engelbrecht. HRIS 24. ACTIVE

15. UNIVERSITY OF WITWATERSRAND: Jan Smuts Avenue. Johannesburg

a. Civil Engineering Department: Same address.

(16) Fracture of Pavement Material. Application of the principles of the mechanics of fracture to predict failure of pavement material by thermal and shrinkage strain, direct flexure, and fatigue. G. E. Blight. HRIS 24. ACTIVE

15. a. (18) Asphalt Surfacing on an Orthotropic Bridge Deck. Use of instrumentation to measure live load deflections at various speeds in a range of temperatures, in a study of the behavior of the steel deck and asphalt surfacing in relation to temperature, aging and cumulative traffic. G. E. Blight. HRIS 25. ACTIVE

(21) Effect of Soluable Salts in Road Aggregate on Performance of Asphalt Surfacings. An investigation of the damage to such surfacings by subgrade salts migrating upwards under evaporation gradients, with particular reference to road surface permeability. G. E. Blight. HRIS 24. ACTIVE

(22) Permanent Deformation of Thick Asphalt Surfacings under South African Conditions. Study of the deformations of sections of city pavement with thick build-ups of material to make streets level and even. G. E. Blight. HRIS 24. ACTIVE

(23) Requirements of Epoxy Resin Mortars for Highway Bridge Nosings. Study of the effect of resin, sand content and sand grading on flexibility, strength, impact strength, coefficient of thermal expansion and permeability of resin mortars for such nosings. HRIS 32. ACTIVE

16. INDUSTRIAL STAFF TESTING SERVICES: P. O. Box 39725, Bramley, Johannesburg

(2) Testing Procedures for Selection of Trainees Who Are to Become Operators of Mobile Equipment. Development of a practical test for selecting personnel for training on mobile equipment, the test to measure trainability and mechanical sensitivity and competence. L. Shaw. HRIS 11. COMPLETE

18. DE LEUW, CATHER AND ASSOCIATES (Consulting Engineers): 641 Ridge Road, Durban, Natal

(7) Roads Inventory System. Investigation and implementation of a data base for national and regional needs for evaluation and maintenance of the National Road System. HRIS 11. ACTIVE

19. KANTEY AND TEMPLER: P. O. Box 3132, Cape Town

(3) Compaction Control Testing. To develop mobile plate loading test device for compaction control. T. Giddings. HRIS 62. COMPLETE

22. UNIVERSITY OF THE ORANGE FREE STATE: P. O. Box 339, Bloemfontein

(3) Comparative Study of Difference in Judgement Between Whites and Non-Whites in Traffic Situations. A study to measure the difference between white and non-white students and municipal bus drivers in judging the distance between vehicles in a parking situation. C. P. J. Erasmus, J. P. Langenhoven. HRIS 51. ACTIVE

(5) Experimental Investigation With Reference to Size and Distance Estimations in the Traffic Situation. To estimate the size of standard danger road signs under variables of speed, height, distance, and viewing conditions; and estimates of distance under effects of culture, attitude, drugs, etc. H. P. Langenhoven, C. P. J. Erasmus. HRIS 52. ACTIVE

(6) Objective Measurement of Proficiency of Drivers. To find a practical method by which cornering proficiency of drivers can be determined. W. R. van Zyl. HRIS 52. ACTIVE

(7) Transportation and Homeland Development. R. B. Eksteen, D. C. van Zchalkwyk. HRIS 13. ACTIVE

(8) Criteria and Priority Determination of Roadworks in the Orange Free State. R. B. Eksteen, D. D. Niehaus. HRIS 11. ACTIVE

New Project

22. (9) A Model Criteria in the Planning of Roads in the Orange Free State. Priority assessment of road planning in the Orange Free State. R. Eksteen. HRIS 12. COMPLETE

25. VAN NIEKERK, KLEYN AND EDWARDS: P. O. Box 121. Silverton 0121

(4) Effect of Sand Equivalent and Grading of Shear Strength and Density of Various Crushed Rock Aggregates. Test various types of crushed aggregates for triaxial shear at fixed grading and density. variation of density of varying gradings and shear strength at various densities. HRIS 35. ACTIVE

(5) Stabilization of Dune Sand with Lime and Fly-ash. To investigate the suitability of Durban Bluff sand as a subbase with these stabilizing mixtures. HRIS 62. ACTIVE

(6) Testing Uniformity of Application and Mixing of Stabilizing Agent in Natural Gravels. To test the feasibility of the tests and limits set in South African Standard Specifications for lime or cement content of stabilized layers. HRIS 62. ACTIVE

(7) Stabilization of Problem Materials. An investigation of means of stabilizing natural gravels which do not conform to the usual requirements when stabilized. L. F. de Wet. SOILLAB. HRIS 62. ACTIVE

(8) Testing for Initial Consumption of Lime. To determine the percentage of lime required to obtain sound material. L. F. de Wet. SOILLAB. HRIS 62. ACTIVE

New Projects

(10) Stabilization of Problem Materials. An investigation of means of stabilizing natural gravels which do not conform to the usual requirements when stabilized. HRIS 35. INACTIVE

(11) Fly-ash for Stabilization - Some Laboratory Results. Discussion of laboratory tests on a number of natural materials stabilized with mixtures of fly-ash with lime and Portland cement. HRIS 62. (Citations) COMPLETE

(12) Testing for Initial Consumption of Lime. To determine the percentage of lime required to obtain sound material. HRIS 62. ACTIVE

(13) Testing Uniformity of Application and Mixing of Stabilizing Agent in Natural Gravels. To test the feasibility of the tests and limits set in South African Standard Specifications for lime or cement content of stabilized layers. HRIS 62. ACTIVE

(14) Stabilization of Dune Sand with Lime and Fly-ash. To investigate the suitability of Durben Bluff sand as a subbase with these stabilizing mixtures. HRIS 62. (Citations) COMPLETE

26. PRETORIA CITY COUNCIL: Munitoria. Pretoria

a. Traffic Department: Same address.

(2) Effect of a One-Way Traffic System and the Partial Closing of a Central Square on Accidents. Statistics are being accumulated for analysis to determine the effectiveness of this scheme which involves about 8 square Kms. Staff. HRIS 54. ACTIVE

(3) Traffic Light Violation Photo Recorders. Installation of cine cameras which are controlled by loop detectors in the roadway to encourage better observance of traffic light signals and to reduce accidents. Staff. HRIS 54. COMPLETE

26. a. (4) Extension of the Robot Clearance Interval by a Flashing Green Indication. Comparison of before and after accident records in the use of a flashing green interval preceding the amber signal at a number of robot-controlled intersections. City Engineer's and Traffic Officer's Department. HRIS 54. ACTIVE

New Projects

(5) Effect of Introduction of Contra-flow and With-flow Exclusive Bus Lanes. Statistics are being accumulated for analysis to determine the effectiveness of this scheme which involves a distance of approximately 30 km. Staff. HRIS 54. ACTIVE

(6) Investigation into the Desirability to Remove 3-and 4-way Stop Signs Control to Allow Faster Uninterrupted Traffic Flow in Local Suburban Streets. Statistics are being accumulated for analysis to determine the effects of this scheme especially on incidents of excessive speeding and to determine fuel savings. Staff. HRIS 54. ACTIVE

b. City Engineer's Department: Same address.

(1) Transportation Plan for Pretoria. Study to include parking, corridor traffic, bus operations, goods traffic, home interviews, and other items. HRIS 16. (Citations) ACTIVE

27. NATIONAL INSTITUTE FOR PERSONNEL RESEARCH: P. O. Box 32410, Breamfontein, 2017

(3) Criterion for Driver Testers. Due to variation of driver testing standards from one authority to another, the study aims to create uniformity and to develop standards against which testers can perform. J. S. du Toit, G. G. Denton. HRIS 51. ACTIVE

(4) Investigation of Pedestrian Culpability Through Erroneous Behavior. An investigation of the ability of selected groups of pedestrians to judge the true velocity of approaching vehicles. G. G. Denton. HRIS 51. ACTIVE

(6) Information Processing for Road Users. Investigate the poor rate of information processing as contributing factor in accidents. HRIS 51. FUTURE

(7) Driver Training Manuals. To adapt driver training manuals for use by low literate levels. HRIS 51. ACTIVE

(8) Influence of Environmental Factors on Road Safety. To identify accident black spots and investigate perceptual factors leading to errors of judgement at such spots. M. Yodaiken, G. G. Denton. HRIS 51. ACTIVE

(9) Attitudes to Road Safety. Adapt and/or develop psychometric methods for assessing road user attitudes to safety factors and make comparative cross-cultural and cross-national studies. M. D. van der Nest, G. G. Denton. HRIS 51. ACTIVE

(11) Adaption of National Road Safety Council Manual for Learner Drivers for Use by Low Level Literates. T. Retief, G. G. Denton. HRIS 51. INACTIVE

(12) A Comprehensive Survey of Literature on Driver Fatigue. An assessment of drivers' attitudes and opinions on the subject, and using simulators to investigate the performance of the driver task as a function of journey time. G. G. Denton, M. van der Nest, N. Connell. HRIS 52. (Citations) ACTIVE

28. NINHAM SHAND, INC.: 16th Floor, Main Tower, Cape Town Centre, Heeregracht, Cape Town 800

(5) University of Cape Town Traffic Study. A determination of traffic needs in the future. G. Ross, R. J. Brown. HRIS 13. (Citations) ACTIVE

(9) Kuilsrivier Traffic Plan. Integration of traffic and transportation study with a town planning study. C. H. Glick, G. Ross. HRIS 12. ACTIVE

(10) Traffic Implications: New Groote Schuur Hospital. Study of the effects of a new major hospital on the immediate environs and on major regional transportation routes. G. Ross, R. J. Brown. HRIS 16. ACTIVE

(11) New Groote Schuur Traffic and Parking Study. Study of the traffic and parking facilities required for smooth operation of a major teaching hospital. G. L. Ross, R. J. Brown. HRIS 54.

29. D. L. WEBB AND ASSOCIATES: P. O. Box 1856 Durban, Natal

(7) Densification of Collapsing Sands by Impact Rolling. D. L. Webb, M. Pavlakis. HRIS 62. ACTIVE

30. SOUTH AFRICA BUREAU OF STANDARDS: Private Bag X191, Pretoria

(2) Draft Specifications for Vehicle Safety. To prepare codes and standards for vehicle safety, including registration plates, safety glass, brakes, lighting, and others. Staff. HRIS 51. (Citations) ACTIVE

31. SOUTHWEST AFRICA ADMINISTRATION: Windhoek, Southwest Africa

a. Road Engineer's Department: Same address.

(1) Development of the Trunk Road System. Planning a trunk road system of 8 routes of about 400 miles (640 kms), to be constructed to high geometric standards to provide all-weather service although not all mileage will have bituminous surfacing. Staff. HRIS 12. ACTIVE

(2) Development and Construction of Gravel Roads. Main roads and other than trunk roads are being built to trunk road standards, including bridges and drainage structures, but with maximum use of naturally occurring materials, frequently stabilized by hydrated lime. Staff. HRIS 33. ACTIVE

(3) Full Scale Experimental Road Tests. In collaboration with the National Institute for Road Research, a continuing study of 18 experimental sand-bitumen sections, as well as the use of calcretes, and the design of roads across sand dune country. Staff. HRIS 21. ACTIVE

(4) Training for Operatives of Roadmaking Machinery. To provide trained personnel for the operation and maintenance of equipment. Staff. HRIS 11. ACTIVE

(5) Use of Aerial Photography. The use of aerial photography in all phases of planning and development, including reconnaisance, mapping, location of material sources, drainage assessment, etc. This work is backed up by computer facilities. Staff. HRIS 21. ACTIVE

(6) Effect of Soluble Salts on the Pavement. To determine the maximum allowable percentage of soluble salts in the base course and subbase layers of the pavement. MIRR of CISR. HRIS 24. ACTIVE

32. BLOEMFONTEIN CITY COUNCIL - CITY ENGINEER'S DEPARTMENT: P.O. Box 288, Bloemfontein, Orange Free State

(1) Long Term Planning for Development of Bloemfontein. Development of a traffic plan for the city, as well as a plan for radial and by-pass roads. Staff. HRIS 55. ACTIVE

(3) Accident Maps and Their Use. A study of black spots to identify remedial action required. HRIS 51. ACTIVE

(4) Parking Study. Survey of on-and off-street parking as an aid to development and implementation of a parking policy. HRIS 54. ACTIVE

(5) Pedestrian Study. A study of pedestrian flow and characteristics for future pedestrianization. HRIS 55. ACTIVE

33. PORT ELIZABETH CITY ENGINEER'S DEPARTMENT: P.O. Box 7, Port Elizabeth, Cape Province

(1) Pedestrian Mall, Central Area in Port Elizabeth. Planning to convert 660 yards of the main shopping street into a pedestrian mall, to include a ring road around the CBD, with parking garages. Staff. HRIS 16. ACTIVE

35. RAND AFRIKAANS UNIVERSITY: P. O. Box 524, Johannesburg

(1) Public Transport in the Witswatersrand Area. A land use and transport study of the integration of public transport services and the effect of quantity and quality of public transport on the location of commercial and industrial activities. P. J. Welgemoed. HRIS 12. ACTIVE

36. MACKINTOSH: BERGH AND STURGESS: P. O. Box 6265, Roggebaai, 8012, Cape Town

(1) Application of Traffic Flow Theories. Study of urban planning and transport requirements. J. F. Pienaar. HRIS 12. ACTIVE

(2) The Financing of Road Works in South Africa. Exploring sources available for exploitation and methods of mobilizing funds and criteria for their allocation. A. E. Scheurkogel. HRIS 14. ACTIVE

(3) Trip Generation Characteristics of South African Households. Continuation of the work outlines in earlier studies at the University of Stellenbosch. J. F. Pienaar. HRIS 55. ACTIVE

New Project

(4) Acceleration Curves of Commercial Vehicles for the Design of Climbing Lanes. To develop graphs for design purposes which will be used for decisions on the provision of climbing lanes along steep grades to accommodate slow traffic. J. Pienaar. HRIS 55. ACTIVE

SPAIN

Supplementary Survey - 1980

The 1980 survey of Spain was conducted under the IRRD program. Nineteen projects not previously reported are listed. Project reports were received from the British Transport and Road Research Laboratory. the English language documentation center for the IRRD.

2. MINISTRY OF PUBLIC WORKS: CENTER FOR PUBLIC WORKS STUDIES AND EXPERIMENTATION (Ministerio de Obras Publicas. Centro de Estudios y Experimentacion de Obras Publicas): Calle Alfonso XII 3. Madrid 7.

a. Highways and Geotechnical Laboratory: Same address.

(149) Classification of Behaviour Patterns of Bituminous Mixes when Subject to Cyclic Loads. To develop and design test methods that will allow typical behavior patterns to be established for asphalt mixtures subject to cyclic loads or dynamic stresses. J. Elvira. M. Pastor. HRIS 31. IRRD 607054. ACTIVE

(150) Behaviour of Gravel-Cement Mixes in Cyclic Loading Processes. To study the behaviour of gravel-cement mixes when subject to cyclic loads by applying a series of cyclic loads to a gravel-cement sample core. J. Elvira. J. Vigueras. M. Pastor. HRIS 24. IRRD 607055. ACTIVE

(151) Traffic Load Classification by Means of Dynamic Weighing Scales. To study traffic conditions and collect and analyze data on axle load distribution obtained throughout the entire road system of the country. J. Cano L. Santamaria, E. Aguirre. HRIS 55. IRRD 607056. ACTIVE

(152) Behaviour of Soils in Shear and Triaxial Test Apparatus with Controlled Suction. To analyze soil behavior (mainly clayey soils) for all possible range of suctions. J. Escario. J. Saez. HRIS 63. IRRD 607057. ACTIVE

(153) Swelling of Soils Caused by Anhydrite. To determine the extent which anhydrite contributes to the swelling of soils when it is accompanied by other minerals. J. Martin Vinas. HRIS 63. IRRD 607058. ACTIVE

(154) Long Term Behaviour of Lime-Stabilized Soils. To study the long-term behaviour of lime-stabilized soils. with special attention to the mineralogical transformations of the soil over time. and their influence on the mechanical properties. J. Jimenez-Salas. E. Dapena. HRIS 62. IRRD 607059. ACTIVE

(155) Surface Deformations Induced by Open-Cut Excavations Flanked by Walls (Either Sheet Pile or Slurry Trench Walls). To estimate the shape and amount of settlements and horizontal movements taking place in the ground surface near an open cut excavation flanked by concrete walls or sheetpile walls. C. Oteo. J. Moya. HRIS 63. IRRD 607060. ACTIVE

(156) Noise and Vibration Induced Problems in Buildings Near Civil Engineering Works. To analyze generation of noise and vibration. their characteristic parameters. measuring instruments and their allowable limits. C. Oteo J. Valerio. HRIS 17. IRRD 607061. ACTIVE

(157) New Code of Standard Specification for the Construction of Piles In-Situ. To prepare draft standard specifications for boring. reinforcement. concreting. quality control. etc.. for seven categories of cast-in-place piles. C. Oteo. A. Uriel. HRIS 62. IRRD 607062. ACTIVE

2. b. Central Laboratory of Structures and Materials: Same address.

(27) Atomic Absorption Analysis of Cements and Related Materials by Dissolving Them Under Pressure Treatment. To propose a new analysis in the field of cements, fly ashes and natural pozzolanic materials consisting of dissolving the samples in closed vessels at temperatures varying between 100 degrees C. and 190 degrees. C. J. Alonso Ramirez. HRIS 32. IRRD 607063. ACTIVE

(28) Pozzolanic Activity Determination by X-Ray Diffraction of Materials Treated Under Low Pressure Steam. To study by means of an X-ray diffractometer samples of natural pozzolanic materials and fly ashes from different sources mixed with several amounts of portland cement. J. Alonso Ramirez. HRIS 32. IRRD 607064. ACTIVE

(29) Dynamic Effect of Traffic on Precast Bridges. To study fatigue of the structural components of road bridges due to dynamic effects of traffic. F. Sainz de Cueto. HRIS 25. IRRD 607065. ACTIVE

(30) The Identification of Clay Minerals. To identify clay minerals by X-ray diffraction, differential thermal analysis, optical and electronic microscopy etc., and their characterization as construction materials. J. Soriano. HRIS 61. IRRD 607066. ACTIVE

(31) Influence of Some Mineral Additives in the Behaviour of the Hardened Paste of Portland Cement. To determine the influence that clay, montmorillonite and sepiolite minerals as well as limestone and dolomite have on portland cement strength. J. Soriano. HRIS 32. IRRD 607067. COMPLETE

3. GENERAL DIRECTORATE OF HIGHWAYS, MINISTRY OF PUBLIC WORKS (Direccion General de Carreteras, Ministerio de Obras Publicas): Avenida del Generalisimo, Madrid 16.

c. Technology Division.

(57) Full Scale Experimental Road Tests for Anti-Skid Surface Dressings with Modified Binders. To establish an adequate technique for restoration of the skid resistance properties of bituminous concrete pavements through a test program of various experimental anti-skid surface dressings in a variety of locations. C. Kora, J. Sahelices. HRIS 24. IRRD 607068. (Citations) ACTIVE

4. MINISTRY OF THE INTERIOR, GENERAL DIRECTORATE OF TRAFFIC (Ministeria de la Gobernacion, Direccion General de Trafico): Josefa Valcarcel, 28, 27, Madrid.

(115) Monthly Trend of Accidens with Victims and Deaths. To compare and analyze accidents with victims and deaths in homologous months of five year series with corresponding trend curves. J. Sanchez-Gabriel. C. Lunar. HRIS 51. IRRD 607069. ACTIVE

(116) Accidents by Type of Vehicle. To study rural road accidents with victims for each kind of vehicle and VH/KM run during the year with special consideration of the existence of traffic offenses, driver's psychophysical state and vehicle state. J. Sanchez-Gabriel, C. Lunar. HRIS 51. IRRD 607070. ACTIVE

8. SANTANDER UNIVERSITY, HIGHER TECHNICAL SCHOOL OF HIGHWAYS, CANALS AND PORTS ENGINEERING (Universidad de Santander. Escuela Tecnica Superior de Ingenieros de Caminos Canales y Puertos): Avenida de los Castros, Santander.

(10) Design Properties and Behaviour of Asphalt Mixes for Open Graded Friction Courses. To formulate a series of porous asphalt mixes to be recommended and/or specified and to observe the behavior of these mixes in the road under real traffic conditions. C. Kraemer, F. Perez, J. Gomez. HRIS 31. IRRD 607071. ACTIVE

(11) Properties of Gypsum Rocks and Application to the Construction of Tunnels. To apply results of strength, compressibility, swelling pressure, petrographic characteristics and other tests to tunnelling operations through gypseous rocks. J. Lopez Alonso. HRIS 34. IRRD 607072. ACTIVE

SRI LANKA

Supplementary Survey - 1980

Mrs. Ruth Christie-David

The 1980 survey of Sri Lanka was reported by Mrs. Ruth Christie-David, Secretary, Sri Lanka Road Federation. Seventeen new projects are reported and one is shown to be complete.

4. CEYLON TRANSPORT BOARD: 200 Kirula Road, Colombo 5

(11) The Economics of Traffic Management. A study of traffic and the economics of proper traffic management. K. Suntheralingam. HRIS 54. ACTIVE

(12) Priority for Buses. A study of the existing bus services in the city of Colombo and suggestions for its expansion utilizing existing resources. M.Y.M. Raoof. HRIS 54. ACTIVE

(13) Traffic Management Measures - City of Colombo. A study with recommendations for improvement of bus traffic and speedier flow. Transport Consultancy Group in collaboration with World Bank. HRIS 54. COMPLETE

(14) Traffic Management Measures - Other Parts of the Island. A study for improvement of bus traffic outside the city of Colombo. Transport Consultancy Group in collaboration with World Bank. HRIS 54. ACTIVE

5. UNIVERSITY OF SRI LANKA: Peradeniya Campus, Peradeniya

a. Department of Civil Engineering: Same address

(13) Investigation of Pedestrian Crossings. The continuation of a project originally carried out at the University of Leeds, England. G. Abeysuriya. HRIS 51. ACTIVE

(14) Consolidation and Shear Characteristics of Peat. A study of consolidation and shear characteristics of peat from the Colombo District. Students of the University. HRIS 63. ACTIVE

18. UNIVERSITY OF SRI LANKA - KATUBEDDE CAMPUS: Katubedde Road, Katubedde

a. Department of Civil Engineering: Same address

(8) Scientific Approach and Coordination in Traffic Management. An investigation of the need for a scientific approach and coordination in traffic management and the application of engineering principles in estimating capacity of highways, planning and design of highways and intersections. D. Wijeysekera, L. Ratnayake. HRIS 21. ACTIVE

(9) Park and Ride Scheme for Colombo. The development of a suitable parking scheme for the City of Colombo. D. Wijeyesekera, L. Ratnayake. HRIS 12. ACTIVE

(10) Development of a Formula for Roundabouts in Sri Lanka. The development of an uniform pattern for roundabouts in Sri Lanka. D. Wijeyesekera. L. Ratnayake. HRIS 21. ACTIVE

(11) Trip Generation Characteristics. Trip generation characteristics of selected groups in the City of Colombo. L. Ratnayake. HRIS 13. ACTIVE

(12) A Computer Model for Traffic Assignment. A computer model for traffic assignment in the City of Colombo. L. Ratnayake. HRIS 12. ACTIVE

(13) Urban Development. The transportation component of Moratuwa Town. D. Wijeyesekera, W. Mendis. HRIS 12. ACTIVE

18. a. (14) Transport Energy Studies. A study of transport energy for Sri Lanka. W. Mendis. HRIS 17. ACTIVE

(15) Economic Appraisals of Transport. Economic appraisals of transportation studies for Sri Lanka. W. Mendis, L. Ratnayake. HRIS 15. ACTIVE

22. NATIONAL ENGINEERING RESEARCH AND DEVELOPMENT CENTRE: Industrial Estate, Ekala, Jaela

(2) Vehicle Controlled Traffic Lights System. The design and fabrication of a vehicle controlled traffic light system for a three-way junction in the City of Colombo. Staff. HRIS 54. ACTIVE

24. SUPERINTENDENT OF POLICE, POLICE HEADQUARTERS: Colombo

(1) Road Traffic Law Enforcement. Reappraisal of road traffic laws in operation in Colombo and study of methods of improvement. M. Selvaratnam. HRIS 70. ACTIVE

(2) Traffic Management in the City of Colombo. A study of traffic in the City of Colombo with a view to improvement of existing methods of management. C. Abeygoonewardena. HRIS 54. ACTIVE

SWEDEN

Supplementary Survey - 1980

The survey in Sweden was conducted by the IRRD. Of 127 projects reported, four are shown to be complete. Project reports were transmitted to the IRF by the British Transport and Road Research Laboratory, the English language documentation center for IRRD.

1. NATIONAL SWEDISH ROAD AND TRAFFIC RESEARCH INSTITUTE (Statens Vaeg-och Trafikinstitut): S-58101, Linkoeping

(364) Characterization of Fuel Efficient Driving Behavior. To study how a car may be driven in a fuel efficient way in different road conditions, with different types of car and different trip lengths. H. Laurell. HRIS 53. IRRD 607174. FUTURE

(365) Post Toxic Effects of Alcohol on Driver Performance in Emergency Driving Situations. To study the after effects of alcohol on driver performance in an emergency where the driver is required to make a complex evasive maneuver. H. Laurell. HRIS 52. IRRD 607175. FUTURE

(366) Long Term Effects of Speed Reducing Road Bumps. To determine whether speed distribution has changed during the two years since measurements were taken when speed reducing bumps were installed. H. Pettersson. HRIS 55. IRRD 607176. ACTIVE

(367) Effects of Rumble Strips. To evaluate three rumble strip installations in terms of vehicle speeds on high speed roads where road geometry requires reduced speeds. H. Pettersson. HRIS 55. IRRD 607177. ACTIVE

(368) Collision Protection at Temporary Roadworks. To study energy absorbing devices intended to protect personnel at temporary roadworks. T. Turbell. HRIS 21. IRRD 607178. ACTIVE

(369) Seat Belts in Heavy Vehicles. To develop specifications for seat belts in lorries and test prototypes both in the laboratory and in traffic. T. Turbell. HRIS 53. IRRD 607179. ACTIVE

(370) Two-Wheelers - Development of a Method for Simulation of the Man-Machine System. To develop a simulation model for the specification of the influence of different variables on the properties of two-wheeled vehicles. C. Oestroem. HRIS 53. IRRD 607180. ACTIVE

(371) Direction Indicators for Mopeds. To investigate the need for direction indicators for mopeds and circumstances under which riders will or will not use them. C. Oestroem. HRIS 53. IRRD 607181. ACTIVE

(372) Car Tyre Wear on Surface Dressings and Asphaltic Concrete. To obtain values of the wear of car tires on a new surface dressing and a new asphaltic concrete after two years of traffic. B. Kihlgren. HRIS 53. IRRD 607182. ACTIVE

(373) Tyre Wear on Different Wearing Courses - Plan Project. To develop expanded tests to compare tire wear on surface dressing and asphaltic concrete, select the best methods and plan and calculate costs to meet objectives of the National Swedish Road Administration. E. Ohlsson. HRIS 53. IRRD 607183. ACTIVE

(374) Vehicle Wear. To increase knowledge of the connection between vehicle wear and road condition and plan research into the problem. O. Odsell. HRIS 53. IRRD 607184. ACTIVE

(375) Measurement of Tyre Characteristic for Measurement Tyres Recommended To ISO Standard. To measure brake and side force characteristics for the recommended ISO measurement tires. O. Nordstroem. HRIS 53. IRRD 607185. ACTIVE

1. (376) Weighing Method for Goods Vehicles with Two Front Axles. To investigate the most appropriate course of action and the preparation of a method for weighing goods vehicles with two front axles. B. Kihlgren. HRIS 55. IRRD 607186. ACTIVE

(377) Micro Computer Based Measurement Equipment. To make larger programs for new micro computer based measurement equipment. C. Dahlquist. HRIS 12. IRRD 607299. ACTIVE

(378) Preliminary Study of the Possibilities of Controlling the Stopping Ability and Road Wear of Studded Tyres. A preliminary study leading to design of a testing facility, costs, and testing methodology. I. Bronge, A. Rosengren, B. Oerbom, M. Lidstroem, E. Ohlsson. HRIS 53. IRRD 607188. ACTIVE

(379) Testing the Efficiency of Braking Systems for Heavy Vehicles. Field Test Methods for Antilocking Systems. To develop and test a measurement system for field testing of heavy vehicle and vehicle combination braking systems with special regard to testing of antilocking systems. O. Nordstroem. HRIS 53. IRRD 607189. ACTIVE

(380) Computer Simulated Testing of Heavy Vehicle Combinations with Antilocking Systems. To develop a computer simulated test of braking systems for heavy vehicle combinations with special regard to the testing of antilocking systems. O. Nordstroem. HRIS 53. IRRD 607190. ACTIVE

(381) Tyre Testing Facility. To design and construct a facility for measurement of tire characteristics of lorries and passenger cars. O. Nordstroem. HRIS 53. IRRD 607191. ACTIVE

(382) Traffic - Traffic Accident Models. To develop models to analyze traffic and traffic safety problems using statistical and mathematical methods. A. Svensson. HRIS 51. IRRD 607192. ACTIVE

(383) Traffic Safety Problems in Urban Areas. To gather data for management and for planning which will reflect the risks of various road users in different street environments. A. Svensson. HRIS 51. IRRD 607193. ACTIVE

(384) Effect Measurement of Minor Road Improvements. To study the traffic safety effects of road improvement measures which with respect to the costs give an optimum benefit. K. Andersson. HRIS 51. IRRD 607194. ACTIVE

(385) Measurements of Speed, Speed Limit Violations and Traffic Composition on Urban Routes. To measure speed and traffic composition over a three year period during the month of September to be used as reference data in a campaign to change speed trends in urban areas. H. Cedersund. HRIS 55. IRRD 607195. ACTIVE

(386) Accident Reduction Measures in Urban Areas. Before and After Study. To study the effects of some measures to reduce traffic accidents in urban areas. A. Svensson. HRIS 51. IRRD 607196. ACTIVE

(387) Accident Rate on Road Stretches and Intersections in Urban Areas. To study the variation of accident rate with intersection design and traffic pattern with respect to accident type and injury consequence. A. Svensson. HRIS 51. IRRD 607197. ACTIVE

(388) Surface Dressing and Sealing Coat Using Emulsion. In place test sections evaluated by ocular inspection with small test surfaces measured by means of laser and photography. C. Backman. HRIS 31. IRRD 607280. ACTIVE

1. (389) Surface For Skidding Training Tracks. Pavement Engineering Investigation. To investigate technical solution for surfaces for skidding training tracks. H. Carlsson. HRIS 34. IRRD 607281. ACTIVE

(390) Highway Snow and Ice Control. To make a state of the art report on techniques of highway snow and ice control, to suggest R&D work on more effective techniques and future alternative processes. K. Gustafson. HRIS 51. IRRD 607282. ACTIVE

(391) Surface Cracks. A Preliminary Study. To clarify the extent and importance of the problem and list known preventive measures. H. Carlsson. HRIS 24. IRRD 607283. ACTIVE

(392) Waste Products as Road Materials. Laboratory and field tests using air-cooled slag as roadbase aggregate and waste products as road materials. P. Hoebeda. HRIS 35. IRRD 607284. ACTIVE

(393) Laboratory Methods for Testing of Road Marking Paints. To develop laboratory methods for testing road marking paints. U. Isacsson. HRIS 34. IRRD 607285. ACTIVE

(394) Improvement and Strengthening of Gravel Roads. Bearing capacity measurements on gravel roads with single surface dressing. H. Jansson. HRIS 40. IRRD 607286. ACTIVE

(395) Laboratory Studies of Frost Heaving of Soils. Laboratory studies on the variation of frost heave with time, with load pressure and with heat flow. L. Steinberg. HRIS 64. IRRD 607287. ACTIVE

(396) Relationship Between the Condition and Soil of the Subgrade and Its Dynamic Modulus of Elasticity Under Different Seasons. To obtain knowledge of the variation in the bearing capacity of different soils, used as subgrade for gravel pavements, according to the season of the year. L. Wiman. HRIS 63. IRRD 607288. ACTIVE

(397) Bearing Capacity Properties of Roads Strengthened with Open Asphalt Emulsion Concrete. To investigate how bearing capacity and water content of a gravel road, strengthened with open asphalt concrete, are influenced by external conditions. B. Oerbom. HRIS 24. IRRD 607289. ACTIVE

(398) Methology for the Repair of Temperature Dependent Cracks in Bituminous Surfacings. To work out a practical method for cracking repair which can avoid consequential damage during a long period. B. Oerbom. HRIS 40. IRRD 607290. ACTIVE

(399) Tapering of Frost Insulation. A method for computer calculation of the heat flow under insulation with increased gaps between the boards and with the resultant frost heave. S. Freden. HRIS 64. IRRD 607291. ACTIVE

(400) The Effects of Management Measures. Experiment with a Different Snow and Ice Control Strategy on Roads Deiced with Salt. To investigate the consequences, if chemical snow and ice control is stopped. G. Carlsson. HRIS 40. IRRD 607292. ACTIVE

(401) The Effects of Management Measures. Fuel Consumption on Different Wearing Course with Varying Degree of Wear. To quantify the effect on fuel consumption of different types of wearing course. H. Saevenhed. HRIS 17. IRRD 607293. ACTIVE

1. (402) The Effects of Management Measures. Relationships Between Road Surface and Journey Speed. To quantify maximum surfacing effect on speed of journey speed in present surfacing routes. B. Kolsrud. HRIS 24. IRRD 607294. ACTIVE

(403) The Effects of Management Measures. Type of Road Surface, Unevenness, Tracking. Accident Analysis. To make clear the relations between accidents and surface condition in order to work out criteria for road surface maintenance. G. Carlsson. HRIS 54. IRRD 607295. ACTIVE

(404) The Effect of Management Measures. Experiments with improved winter maintenance readiness. Accident analysis. U. Bjoerketun. HRIS 40. IRRD 607296. ACTIVE

(405) Correlation Between Surface Condition of Gravel Roads and Fuel Consumption. To illustrate the relation between surface conditions of gravel roads and fuel consumption of passenger cars at different speeds. G. Carlsson. HRIS 40. IRRD 607297. ACTIVE

(406) Side Position Detector of Vehicles. To investigate the possibilities of automatic side position measurements of passing vehicles. C. Dahlquist. HRIS 55. IRRD 607298. ACTIVE

2. NATIONAL SWEDISH ROAD ADMINISTRATION (Statens Vaegverk): S-78187, Borlaenge

(31) Arterial Roads in Urban Areas, Stage 1. The project will add to the data on roads in the Swedish Road Data Bank by adding data on traffic and accidents on arterial roads in towns where the local authorities are road administrators. P. Genberg. HRIS 12. IRRD 607300. ACTIVE

(32) The Variations of Traffic with Time. The data obtained from counts taken at 80 locations will improve the year rank curves. T. Bergh. HRIS 12. IRRD 607301. ACTIVE

(33) Hourly Traffic At Junctions. Improved specifications for junction layout and choice of junction. T. Bergh. HRIS 55. IRRD 607302. ACTIVE

(34) The Variation of Traffic with Time in Urban Areas. To increase knowledge of the variations of traffic with time in urban areas by surveys and analysis of the differences observed. M. Petersson. HRIS 12. IRRD 607303. ACTIVE

(35) Methods for Traffic Distribution on Rural Roads. To achieve increased accuracy in priority assessment and improved basic data for the choice of standard cross section. M. Petersson. HRIS 12. IRRD 607304. ACTIVE

(36) Geometric Design of Interchanges. Intended to result in revision and adjustment of the Swedish specifications for geometric design of interchanges. H. Skoelving. HRIS 21. IRRD 607305. ACTIVE

(37) Traffic Signals on Rural Roads. To provide decision data for traffic signals on high speed rural roads. T. Bergh. HRIS 54. IRRD 607306. ACTIVE

(38) Game Fence. Project will clarify the cost and effectiveness of a clearly visible, weak game fence through experiments. D. Eldroth. HRIS 51. IRRD 607307. ACTIVE

8. ROYAL INSTITUTE OF TECHNOLOGY (Kungliga Tekniska Hoegskolan): Fack, S-10044 Stockholm 70

(27) Laser Optometer for Measurement of the Accommodation State of the Eye. To identify important visual phenomena and visual defects in difficult work conditions, night driving and military night enterprises. E. Ingelstam, K. Jansson, B. Tengroth, D. Epstein. HRIS 52. IRRD 606791. (Citations) ACTIVE

(28) Criteria for Maintenance Priority Decisions. To establish criteria for deciding priorities in road rehabilitation and maintenance projects. A. Homsi. HRIS 40. IRRD 606834. ACTIVE

(29) Utilization and Evaluation of Rock Mechanical Measurement Systems for Rock Construction - The Huvudsta Project. To measure convergence, extensometer and stress in connection with rock blasting of the underground station "Huvudsta" in Solna. H. Stille. HRIS 63. IRRD 606835. ACTIVE

(30) The Advanced Lead Acid Battery. To produce a lead acid battery with considerably improved energy density (WH/KG). A. Lindholm, R. Magnusson. HRIS 53. IRRD 607198. (Citations) ACTIVE

(31) Fuel Cell for Traction Purposes. To identify problems connected with development, manufacture and operation of alkaline fuel cell systems for traction purposes. C. Sylwan, O. Lindstroem. HRIS 53. IRRD 607199. (Citations) ACTIVE

(32) Sealed Rechargeable Iron-Oxygen Battery. To demonstrate a new iron-oxygen battery. M. Bursell. HRIS 53. IRRD 607200. (Citations) ACTIVE

9. UNIVERSITY OF STOCKHOLM (Stockholms Universitet): Box 6801, S-11346, Stockholm

(44) Long Distance Passenger Traffic. To conduct a survey on long distance passenger traffic and formulate proposals for a research and development program. B. Borgstrand. HRIS 12. IRRD 606792. (Citations) ACTIVE

(45) A Study of Effectiveness of the Projects "Children's Traffic-Club" and "Children in the Traffic." An evaluation report on these two different programs for traffic information concluding that no evidence of any substantial effects on behavior or accident rates could be found. S. Westius, C. Tengbom. HRIS 51. IRRD 606793. (Citations) ACTIVE

(46) Chemical Characterization of Organic Matter in Automobile Exhausts. To develop methods for sampling and analysis of automobile exhaust gas, and to test real and synthetic samples in genotoxicological tests. U. Stenberg, T. Alsberg. HRIS 17. IRRD 607201. FUTURE

11. UNIVERSITY OF UPPSALA (Uppsala Universitet): P. O. Box 516, S-75120, Uppsala 1

(38) Effects of Weather on Measurements of the Equivalent Noise Level. To conduct simultaneous measurements of traffic noise propagation and meteorological variables over a period of eighteen months on a traffic route. S. Israelsson, C. Larsson. HRIS 17. IRRD 606794. (Citations) ACTIVE

(39) The Influence of Meteorological Factors on Sound Propagation and Screening of Sound. A study of how meteorological parameters affect noise barriers' efficiency under different ground conditions. S. Israelsson, C. Larsson. HRIS 17. IRRD 606795. ACTIVE

(40) The Effect of Road Signs and Road Markings on Traffic Safety: A Survey of Literature. A survey of literature of the effect of road signs and road markings on traffic safety. L. Aaberg. HRIS 54. IRRD 607202. ACTIVE

11. (41) Children and Instruction in Road Safety. To improve the road safety instruction in the compulsory comprehensive school since current instruction is not having a satisfactory effect. L. Ryhammar, G. Berglund. HRIS 51. IRRD 607203. (Citations) ACTIVE

12. CHALMERS UNIVERSITY OF TECHNOLOGY (Chalmers Tekniska Hoegskola): Fack S-41296, Goeteborg

(70) Catalytic Purification of Car Exhausts Specially Concerning Sulphuric Acid and Formaldehyde. To study environmental problems associated with emission of sulphuric acid mist from car exhausts and attempts to reduce its formation. H. Schoeoen. HRIS 17. IRRD 606796. ACTIVE

(71) Study of Punching in Thin Plates, Bridge Deck Plates. To investigate how punching is influenced by the number of point loads, their relative distance, plate thickness and type of support. T. Pettersson. HRIS 25. IRRD 606836. FUTURE

(72) Influence of Prestressed Reinforcement on Shear Capacity of Beams in Plastic Design. To control the influence of plastic hinges on the shear capacity of beams with different degrees of prestressing. T. Pettersson. HRIS 25. IRRD 606837. (Citations) ACTIVE

(73) A Computer Model for Calculating the Dispersion of Exhaust Gases in Urban Areas. To develop a computer program for calculating the dispersion of non-reactive vehicular pollutants. C. Lindberg. HRIS 17. IRRD 607204. ACTIVE

(74) The Dimensions of the Road. Literature and in situ studies of the standard of streets in different countries to form a basis for selection of optimal street standards adapted to the prerequisites of the area. G. Lanner, E. Hoegberg. HRIS 21. IRRD 607205. (Citations) ACTIVE

(75) Dewatering of the Road. To investigate alternative systems for dewatering of roads with respect to hydraulic capacity, contaminant transport, prerequisites of management and economy. A. Bjoerkman. HRIS 22. IRRD 607206. (Citations) ACTIVE

13. LUND UNIVERSITY OF TECHNOLOGY (Lunds Tekniska Hoegskola): Box 725, Fack S-22007, Lund 7

(35) Future Transportation Systems in Urban Areas. To analyze long-range consequences of anticipated trends in urban land use and identify gaps in present knowledge as a basis for the formulation of research programs. A. Hansson, B. Dahlqvist. HRIS 12. IRRD 606797. ACTIVE

(36) Safety in Urban Areas Where Unprotected Road-Users Dominate. To achieve increased knowledge regarding unprotected road-users in urban areas and investigate the effects of speed control countermeasures in such areas. C. Hyden, K. Libeus, H. Persson. HRIS 54. IRRD 606838. ACTIVE

(37) Elderly People in the Traffic System. To study the problems of persons over 65 in the traffic environment, particularly transportation demands which cannot be met because of deficiencies in the traffic system. B. Holmberg, A. Staahl. HRIS 12. IRRD 606839. COMPLETE

(38) Travel Behavior of Pedestrians and Cyclists. To study the factors involved in people deciding to, or not to, cycle. B. Holmberg, L. Warsen. HRIS 12. IRRD 606840. ACTIVE

(39) Bikeways in Lund. To study how cyclists change their choice of route when a bikeway from a residential area to the center of town is made more attractive. I. Johansson, L. Warsen. HRIS 12. IRRD 606841. ACTIVE

13. (40) Demonstration Projects - Towards Car Rental Systems. Projects involving comparison of benefits of renting cars with other forms of transport. K. Dahlstroem. HRIS 16. IRRD 607207. ACTIVE

14. SWEDISH TRANSPORT RESEARCH COMMISSION (TRANSPORTFORSKNINGSKOMMISIONEN): Grev Turegatan 12A, S-11446, Stockholm

(13) Vehicles of the Future for Distribution of Everyday Commodities. To identify alternative solutions for distribution of commodities to retail trade and institutional households. K. Baang. HRIS 12. IRRD 606798. ACTIVE

(14) Improved Goods Receiving Conditions in Town Centres. To recommend ways of improving conditions for goods reception through changes in regulations, organization, city planning, building alterations and more equipment. B. Ljungstroem, J. Sandahl, K. Henriksson, B. Laudon. HRIS 12. IRRD 606842. ACTIVE

16. CITY OF STOCKHOLM (Stockholms Kommun, Gatukontoret): Fack S-10420, Stockholm

(8) Car Pooling in Stockholm. To investigate how an information campaign can increase the pooling frequency in the county of Stockholm. A. Holmovist, O. Asplund, B. Nelldal. HRIS 16. IRRD 607208. FUTURE

20. VBB CONSULTING ENGINEERS AND ARCHITECTS AND ECONOMISTS: Vattenbyggnadsbyraan - AB): Geijersgatan 8. S-216 18 Malmoe

(14) Methodology for Measuring the Uncertainty of Methods of Appraisal. To formulate and estimate measures of uncertainty in methods used to appraise investments in the transport sector, particularly consumers' surplus measures. N. Bruzelius, C. Cassel. HRIS 13. IRRD 606799. (Citations) COMPLETE

(15) Design and Operation of Signalized Intersections. To develop a handbook for the design and operation of signalized intersections which includes the use of a simulation model. A. Hansson. HRIS 54. IRRD 606843. (Citations) ACTIVE

24. ABV CONTRACTOR COMPANY (ABV Armerad Betong Vaegfoerbattringar AB): S-11288, Stockholm

(3) Wearing Course of Open Graded Asphaltic Concrete. To find out if changes in the composition of the mix can allow higher temperature without increase of the runoff or decrease of quality. S. Sjoeblom, J. Bjoerkbom. HRIS 24. IRRD 607209. ACTIVE

28. VOLVO CAR CORPORATION (Volvo Personvagnar AB): S-40508, Goeteborg

(9) Consequences of Accidents Between Cars and Rigid Objects. To clarify the consequences to occupants and vehicles and measure the effect of collisions with different objects. B. Kjellberg. HRIS 51. IRRD 607210. ACTIVE

31. NORDIC INSTITUTE FOR STUDIES IN URBAN AND REGIONAL PLANNING (Nordiska Institutet Foer Samhaellsplanering): Skeppsholmen, S-11149, Stockholm

(7) Teletrans - Ridesharing Supported by Telecommunications. To test the use of tele and radio communications as an aid in the operative activity of organized ridesharing. B. Sahlberg, M. Engstroem. HRIS 16. IRRD 607211. ACTIVE

(8) Attitudes to Modal Choice for Long Distance Journeys. To illuminate the factors which are of great importance in selecting transport mode for long distance journeys. M. Engstroem, B. Sahlberg, J. Wigen. HRIS 13. IRRD 607212. ACTIVE

37. KJESSLER & MANNERSTRAALE, LTD: Box 5107, S-10243, Stockholm 5

(10) Method of Evaluating Urban Pavements. To develop a method of evaluating the pavement condition of urban roads. H. Broms. HRIS 24. IRRD 607335. (Citations) ACTIVE

42. NATIONAL SWEDISH INSTITUTE FOR MATERIALS TESTING LABORATORY FOR SURFACE PROTECTION AND CORROSION (Statens Provningsanstalt, Laboratoriet Foer Ytskydd Och Korrosion) Box 857, S-50115, Boraas

(7) The Supporting Effect of Using Road Salt on the Corrosion of Vehicle Underbodies. Reference Investigation the Winter Season 1979-1980. To evaluate the difference between two road sections with respect to vehicle corrosion when deicing salt is used and each section comprises a test section and a control section. K. Jutengren. HRIS 40. IRRD 607213. ACTIVE

48. TRAFIKSAEKERHETSUTREDNINGEN (TSU): Fack S-10333, Stockholm

(5) Master Sampling and Master Frames in a Statistical System for Traffic Safety. To utilize a master sampling approach to obtain different sorts of missing accident statistical data for analysis and research. HRIS 51. IRRD 606800. ACTIVE

50. K-KONSULT: S-117 80, Stockholm

(3) Guide Lines for Parking Rating-Effects During 10 Years. A study concerning the economics of co-utilization of parking spaces between communities of various sizes. B. Kjellin. HRIS 15. IRRD 606801. ACTIVE

53. IFM-BUREAU OF ACOUSTICS INC. (IFM-Akustikbyraan AB): Warfvinges Vaeg 26, S-112, 51, Stockholm

(6) Dynamic Material Properties of Polymeric Material Exposed to Large Predeformations. To describe and present dynamic material data for static loaded rubber material which might assist in the search for an effective vibration insulation. A. Zdunek. HRIS 34. IRRD 606802. ACTIVE

54. NATIONAL BOARD OF OCCUPATIONAL SAFETY AND HEALTH (Arbetarskyddsstyrelsen): S-17184, Solna

(8) The Mechanics of Slipping Accidents. To specify realistic methods with high reproducibility which can be used for type testing or progress inspection of slipping resistance of walking base and shoes. L. Strandberg, H. Ianshammar. HRIS 51. IRRD 606844. ACTIVE

56. UNIVERSITY OF LUND (Lunds Universitet): Fack, S-22350, Lund 1

(12) Personality and Driver Education. To study the differences in driving behavior between drivers of different personalities and to investigate the connection between accident involvement and driver personality. L. Trygg, B. Svensson. HRIS 51. IRRD 606803. ACTIVE

(13) Head Injuries in Motorcycle and Moped Drivers Wearing and Not Wearing Helmets. To find out whether the injuries differ for riders who wear helmets and those who do not, particularly in low speed accidents. P. Krantz. HRIS 51. IRRD 606804. ACTIVE

(14) Smaller Time Budget Investigation Within the Framework of the Astra Project. To gather more detailed information on the role of the journeys in daily life associated with the test of demand responsive bus traffic in Nynaeshamn. S. Maartensson. HRIS 13. IRRD 607214. ACTIVE

57. TELEPLAN AB: Fack S-171 25, Solna

(4) Design and Implementation of a Computerized Dispatching System for Taxi. To design and evaluate a minicomputer aided dispatching system for ordinary and shared ride taxi. K. Almen, H. Andersson, A. Otteblad, O. Lejdal, L. Solnestam. HRIS 12. IRRD 606805. ACTIVE

65. SVERIGES GEOLOGISKAUNDERSOEKINING (Geological Survey of Sweden): Box 670 S-75128, Uppsala

(4) Methods for Inventory of Gravel Resources Below the Ground Water Table. To estimate gravel resources under the ground water table through hydrogeological mapping as a cost saving measure. B. Ericsson, T. Soederlund. HRIS 61. IRRD 606845. ACTIVE

73. UNIVERSITY OF LULEAA, INSTITUTE FOR TRANSPORTATION (Luleaa Hoegskola, Institutionen foer Transportteknik): S-95187, Luleaa

(4) The Naelsliden Project - Finite Element Model Based on In Situ Measurements in Cut-and-Fill Mine. To estimate stresses and deformations arising in construction of rock facilities with the help of the finite element method. O. Stephansson, N. Kranlund. HRIS 63. IRRD 606806. ACTIVE

(5) The Function of Rock Bolt Systems. A further development of measurements made on rock bolts, and field measurements in bolt systems. F. Bjoernfot, B. Ludvig. HRIS 63. IRRD 606807. ACTIVE

(6) Controlled Hydraulic Cracking Method for Determination of the Stresses in the Earth's Crust. To develop an instrument for registration of crack formation and crack direction when using and analyzing hydraulic cracking. O. Stephansson. HRIS 63. IRRD 606808. ACTIVE

(7) Limestone of Norvijaure. Transport Systems to Consumers in Central Sweden. To propose technical system development and to accomplish cost estimates for transporting limestone. T. Hensvold, T. Wiberg. HRIS 15. IRRD 607216. ACTIVE

(8) Transport from Mines. To describe the arrangement of transport from the mineral deposits in Hietajokki and Masugnbyn. E. Hensvold. HRIS 15. IRRD 607217. FUTURE

(9) Oil Transport in the County of Norrbotten. To map present oil distribution and give proposals for future direction of the distribution system. R. Bruks, C. Fjellstroem, E. Hensvold. HRIS 15. IRRD 607218. ACTIVE

(10) Snow Removal - Plan of A Project. To investigate whether snow removal methods which have been used until now are appropriate or if they can be improved. J. Adolfsson. HRIS 40. IRRD 607219. ACTIVE

(11) Mechanical Properties of Frozen Soils. To increase knowledge of the properties of natural and artificial freezing for stabilization of soil. R. Pusch, S. Knutsson. HRIS 61. IRRD 607220. ACTIVE

(12) Frost Damaged Descent Wells - Causes and Measures. To demonstrate how frost sensitive soils are damaged in descent wells and suggest a more suitable shaping of the well design. S. Knutsson, R. Pusch. HRIS 63. IRRD 607221. ACTIVE

(13) Simulation Models as a Tool for Studying the Freight Transportation and the Related Infrastructure of a Whole Region. To develop a simulation model which will illuminate how a transport structure is utilized given varying interregional need for transport. E. Hensvold. HRIS 13. IRRD 607222. FUTURE

74. SWEDISH ROCKMECHANICS RESEZRCH FOUNDATION (Stiftelsen Bergteknisk Gorskning)
Box 5501, S-11485, Stockholm

(2) Estimation of Rock Pressure for Practical Stability Analyses. To estimate rock pressure and its consequences for different kinds of underground cavities in different geological environments. F. Ouchterlony. HRIS 63. IRRD 606808. ACTIVE

(3) The Reinforcement Effect of Shotcrete in Bad Rocks. To study the reinforcement effect of shotcrete shells sprayed on and surrounded by crushed rocks. T. Franzen. HRIS 63. IRRD 606810. ACTIVE

75. CENTERLOEF & HOLMBERG LTD: Box 793, S-220 07 Lund

(2) Tension-Stiffening in a Cracked Tensile Zone. A further study of tension stiffening under imposed deformations such as loading and unloading. A. Holmberg. HRIS 25. IRRD 606811. (Citations) COMPLETE

79. KB UNITED STIRLING (SWEDEN) AB & CO.: Fack, S-201 10 Malmoe 1

(2) A Systems Study of Stirling Engines in Mining Vehicles. To show the environmental improvements realized by using Stirling engines instead of diesels in mines. Y. Haaland. HRIS 17. IRRD 607223. COMPLETE

81. NATIONAL SWEDISH LABORATORY FOR FORENSIC CHEMISTRY (Statens Raettskemiska Laboratorium, Toxikologisk-Kemiska Avdelningen): Fack, S-104 01, Stockholm 60

(2) Alcohol and Road Traffic Accidents with Severe Injury to the Driver. To study the extent and amount of alcohol affected road users involved in traffic accidents with serious personal injury, with a critical analysis from a medico-legal point of view. R. Bonnichsen, A. Solarz. HRIS 52. IRRD 606812. ACTIVE

83. NYNAES PETROLEUM COMPANY (AB Nynaes Petroleum, Asfaltlaboratoriet): Box 1002, S-14901, Nynaeshamn

(2) Investigation on a Pavement Testing Track of Plastic Deformation of Bituminous Pavement. To investigate the importance of the rheological properties of the binder for the ability of the surfacing to resist plastic deformation. H. Turpeinen, A. Arvinen, A. Arvinen, A. Billstroem, R. Larsson. HRIS 24. IRRD 607224. ACTIVE

93. SWEDISH INSTITUTE OF AGRICULTURAL ENGINEERING (Jordbrukstekniska Institutet): Ultuna. S-75007, Uppsala 7

(2) Connecting, Disconnecting, and Controlling of Machines, Implements and Trainers in Tractor Works. The study concerns the use of servo mechanisms in minor workshops. O. Noran, H. Gustafsson. HRIS 51. IRRD 607225. ACTIVE

97. ASEA TRACTION DEPARTMENT (Asea Konstruktionsavdelningen Foer Fordon): S-72183, Vaesteraas

(1) Automatic Current Collector. To devise a simplified variant of a system which can automatically search for the overhead contact of an electric bus while in motion. S. Soederberg. HRIS 53. IRRD 606813. FUTURE

(2) New Generation of Traction Motors with Driving Devices. To use modern techniques in the development of traction motors, couplings, switches, etc., for locomotives, motor vehicles and trams in order to improve performance. B. Soederberg, G. Lindholm, H. Persson. HRIS 53. IRRD 606814. ACTIVE

100. SWEDISH ROAD COMPANY (Svenska Vaegaktiebolaget): S-17197, Solna

(1) Heating - Energy Consumption of a Material Saving Repair Method of Bituminous Surfacings. An economically advantageous alternative to conventional methods of repairing worn bituminous surfaces by heating the old surface and laying new mix on the hot surface. N . Ulmgren. HRIS 31. IRRD 606815. ACTIVE

(2) Levelling of Rock by Horizontal Drilling. To carry out floor tests with levelling by horizontal drilling which produce economy and obtain a solid and even blast. C. Greiffe, B. Sjaelander. HRIS 33. IRRD 607226. ACTIVE

101. SWEDISH NATIONAL DEVELOPMENT COMPANY (Svenska Utvecklings AB, Avdelningen Foer Energi - Och Miljoeteknik): Box 34, S-18400, Aakersberga

(1) Tractional Fuel Cells. To acquire Swedish operational experience of fuel cells in vehicles, including pilot survey of cells and design of vehicle. I. Aakerblom, S. Schwartz. HRIS 17. IRRD 606816. ACTIVE

(2) Electric Vehicles. To test and modify electric vehicles and conduct theoretical and practical studies on power requirements. I. Aakerblom, R. Soederstroem. HRIS 17. IRRD 606817. ACTIVE

102. VAEXJOE UNIVERSITY COLLEGE, DEPARTMENT FOR ECONOMICS AND ADMINISTRATION (Vaexjoe Hoegskola, Institutionen Foer Ekonomi Och Administration): S-35005, Vaexjoe

(1) The Internationalization of Sweden's Road Transportation. A comprehensive study of international highway transportation in Sweden including jurisdictional problems and other factors influencing internation road transportation. L. Rask, L. Nilsson, G. Sidenvall. HRIS 11. IRRD 606818. (Citations) ACTIVE

103. BERGAB: Box 13095, S-40252, Goeteborg

(1) Grouting Performance and Results. To evaluate geology and sealing methodology at some facilities under construction and correlate an investigation of rock structures with utilized grouting method and sealing result. K. Palmqvist. HRIS 62. IRRD 606819. ACTIVE

104. INSTITUTE OF TECHNOLOGY (Teknologisk Institut): Gregersenvei, 5630, Taastrup

(1) Scania Chassis. To elucidate the consequences of straightening the same truck chassis one, two, or repeated times. I. Rasmussen. HRIS 53. IRRD 606846. (Citations) ACTIVE

105. STOCKHOLM COUNTY COUNCIL (Stockholms Laens Landsting, Regionplanekontoret Och Trafikkontoret): Box 7841, S-10398, Stockholm

(1) Analysis of Connections Between Transport Systems and the Location of Working Places. To make a statistical analysis by means of cross-section data to map the interaction between transport systems and location of working places in the county of Stockholm. L. Lundqvist, U. Stroemqvist. HRIS 13. IRRD 607227. (Citations) ACTIVE

(2) Regional Planning and Future Energy Systems. To analyze the relation between space for action in regional planning and in energy politics with the help of the scenario technique. L. Lundqvist, U. Stroemqvist. HRIS 12. IRRD 607228. (Citations) ACTIVE

106. SWEDISH ASSOCIATION OF LOCAL AUTHORITIES (Svenska Kommunfoerbundet): Hornsgatan 15, S-11647, Stockholm

(1) Information System for Planning, Design, Building and Using of Streets and Roads. To describe some information systems for planning, design, building and using of streets and roads. Staff. HRIS 12. IRRD 607229. ACTIVE

107. NATIONAL SWEDISH BOARD FOR CONSUMER POLICIES (Konsumentverket Byraa 3 Transporter): Box 503, S-16215, Vaellingby

(1) Automobile Maintenance 2. To survey car owner's maintenance of his car. Staff. HRIS 53. IRRD 607230. ACTIVE

108. NITRO CONSULT COMPANY (Nitro Consult AB): Box 32058, S-12611, Stockholm

(1) Traffic Vibration Research. To research generation of ground vibrations from vehicles, propagation of ground vibrations, transfer of vibrations from ground to building, effects of vibrations in ground and building and measures against vibrations produced by vehicles. G. Lande. HRIS 17. IRRD 607232. ACTIVE

SWITZERLAND

Resurvey - 1980

The 1980 resurvey of Switzerland was conducted by the IRRD. A total of 168 projects is reported, 14 for the first time. Of the total 38 are shown to be complete. Project reports were transmitted to IRF by the British Transport and Road Research Laboratory, the English language documentation center for IRRD.

1. SWISS FEDERAL INSTITUTE OF TECHNOLOGY (Eidgenossische Technische Hochschule): Gloriastr, 82 CH-8044 Zuerich

   a. Institute for Road, Railroad and Rock Engineering: ETH Hoenggerberg, CH-8093, Zuerich.

      (2) Crash Barriers: Mechanics, Accidents, Standards. To study the performance of crash barriers to enable setting up standards. H. Grob, Wotrli. HRIS 21. IRRD 700373. COMPLETE

      (4) Skid Resistance of Road Surfaces. Testing and comparison of friction measuring instruments. H. Grob, E. Lee, S. Huschek. HRIS 24. IRRD 700374. ACTIVE

      (6) Stability of Rock Slopes. A study of factors affecting rock slipping. H. Grob, Zanier. HRIS 62. IRRD 700375. ACTIVE

      (9) Observation of the Performance of Selected Sections of Road. To establish a method of geometric design as influenced by traffic and other factors. (With the Laboratories for Hydraulic Research and Soil Mechanics, E.T.H. Zurich and the Otto-Graf Institute, Stuttgart, Germany. H. Grob, E. Lee. HRIS 21. IRRD 700376. COMPLETE

      (14) Effects of the Transverse Distribution of Trucks on Pavement Design. Clarification of the effects of channelized truck traffic on pavement design through measurements of transverse load distribution and developing standards for pavement design. I. Scazziga. HRIS 24. IRRD 700092. COMPLETE

      (16) Accidents at Median Crash Barriers. Comparison of the effectiveness of various types of frangible barriers considering accident severity, damage to and cost of repairing the barrier, and the safety of other traffic. P. Pingoud, E. Schneider. HRIS 51. IRRD 700193. ACTIVE

      (17) Behavior of the Road Structure Under Dynamic Wheel Loads. Determine by systematic measurements the state of stress in, and deformation behavior of the road structure under wheel loads. HRIS 24. IRRD 700333. ACTIVE

      (18) Dynamic Testing of Bearing Capacity with a Vibrating Apparatus. To establish scientific reasons for the use of vibrating equipment for road design and strengthening of existing roads. HRIS 24. IRRD 700339. ACTIVE

      (19) Soil Classification. To establish a table of all soil classes with properties contained in the Swiss standards to further standardization and fill gaps in soil classification. D. Bystricki. HRIS 61. IRRD 700338. ACTIVE

      (20) Skidding Resistance in Tunnels and Fairly Long Underpasses. To determine skidding resistance of covered road sections not affected by rain. H. Grob. HRIS 24. IRRD 700348. ACTIVE

      (22) Long-Term Behavior of Bituminous Mixture. To determine the deformation behavior of bituminous-bound material under static and low-frequency repeated loads. H. Grob, H. Huschek. HRIS 31. IRRD 700347. ACTIVE

1. a. (23) Construction of the Circular Test Track (Loading Apparatus). I. Scazziga. HRIS 24. IRRD 701599. ACTIVE

(24) Practical Application of Skidding Resistance Measurements. R. Pelloli. HRIS 24. IRRD 701600. ACTIVE

(25) Ventilation in Tunnels. R. Burger, M. Ghielmetti, U. Steinemann. HRIS 25. IRRD 701601. (Citations) ACTIVE

(26) Lighting of Road Tunnels. M. Ghielmetti, U. Graf. HRIS 21. IRRD 701602. COMPLETE

(27) Creep Tests to Evaluate the Plastic Deformability of Bituminous Mixtures. To develop simple method of evaluating the mechanical properties of compacted bituminous mixtures, particularly resistance to plastic deformation. S. Huschek, P. Staub. HRIS 31. IRRD 701939. COMPLETE

(28) Collision Tests on Safety Fences. To effect improvements of cable fences to prevent low sports cars from going under and lorries going over and through them. M. Klingler. HRIS 21. IRRD 701940. COMPLETE

(29) Triaxial Test on Compacted Bituminous Mixtures. To simplify the test to make it more practicable to be used. S. Huschek. HRIS 31. IRRD 701941. ACTIVE

(30) Static Compression Tests on Damping Elements in Safety Fences. To find a damping element which is suitable for rigid bridge parapets. M. Klingler. HRIS 21. IRRD 701942. ACTIVE

(31) Safety Fences on Roads Carrying Mixed Traffic. To prepare recommendations for the positioning and design of safety fences on main traffic, feeder and development roads, with special reference to such cases as tunnel entrances, urban conditions, etc. M. Klingler, P. Buerkel. HRIS 21. IRRD 702066. ACTIVE

(32) Morphological Evaluation of Compacted Bituminous Mixtures. To develop a method for assessing the effect of variable compaction on the arrangement of the three components: mineral, bituminous mortar and voids. C. Angst. HRIS 31. IRRD 702067. ACTIVE

(33) Measuring Equipment for Increasing Evenness in the Cross Section. To develop equipment and method for photographic recording of road cross section from a moving vehicle, including a vehicle controlled by radio. S. Huschej, G. Bachner. HRIS 24. IRRD 702068. ACTIVE

(34) Long Term Behavior and Design of Cement Stabilized Bases. To obtain positive information on the expected life of these bases in relation to the layer thickness. I. Scazzuga, H. P. Rossner. HRIS 62. IRRD 702069. ACTIVE

New Projects

(35) Impact Tests on Median and Edge Safety Fences Having a Box Section. To evaluate the use of box section safety fences, determine need for improvements and modifications and facilitate comparisons with other systems. H. Koester. HRIS 21. IRRD 702403. ACTIVE

(36) Analysis of Accidents Involving Median Safety Fences Having Box Sections. To establish the suitability of the box section median safety fence, evaluate accidents involving them, and make recommendations regarding additional installations. H. Koester. HRIS 21. IRRD 702405. ACTIVE

New Project

1. a. (37) Accidents on a Section of Road Provided with a Modified Cable Safety Fence. To study whether the modified cable safety fence should be introduced generally and whether existing cable fences could be converted to the design found best in tests. H. Koester. HRIS 21. IRRD 702408. ACTIVE

c. Institute of Foundation Engineering and Soil Mechanics: ETH Hoenggerberg, CH8093 Zuerich.

(7) Test Methods for the Frost Resisting Properties of Roadbed Materials. To develop a testing method for smaller laboratories and propose a test standard. F. Balduzzi. HRIS 31. IRRD 700379. COMPLETE

(11) Thermally Insulated Roads for Heavy Vehicles. To test the suitability of insulated roads by measurements of compression, ground pressure, deflections and profile changes. F. Balduzzi. HRIS 24. IRRD 700378. COMPLETE

(12) Fatigue of Stabilized Layers. Prediction of behavior of thick stabilized layers made of locally-obtained materials through laboratory tests. Gschwind. HRIS 62. IRRD 700337. COMPLETE

(13) Dynamic Intensive Compaction (Improvement of the Subsoil). To develop criteria and a methodology for study which will enable the designer to assess possibility of using dynamic intensive compaction. J. Studer. HRIS 62. IRRD 701943. ACTIVE

New Projects

(14) Possible Occurrence of Damage in Fully Stabilized Pavements. Two sets of deflection measurements were carried out on a fully stabilized pavement and revealed no difference in the deflections, either with respect to the cracked and uncracked points. M. Caprez, F. Balduzzi. HRIS 24. IRRD 702399. ACTIVE

(15) Trafficability and Final Compaction of Two-Layer Systems. To examine trafficability and final compaction of two-layer systems in relation to good and inferior subsoils. F. Balduzzi. HRIS 24. IRRD 702400. ACTIVE

(16) Geotextiles - Hydraulic Functioning. To explain the hydraulic functioning of geotextiles through use of an apparatus which also may serve as a basis for standard hydraulic tests for geotextiles. F. Bucher, R. Duerst. HRIS 34. IRRD 702402. ACTIVE

e. Institute of Structural Research: ETH, Hoenggerberg, CH 8093, Zurich

(1) Partial Prestressing in Bridge Construction. The influence of inclined prestressing cables on deformation and failure behavior of partially prestressed beams. B. Thurlimann. HRIS 25. IRRD 700380. ACTIVE

(2) Computer Statistics. Development of a computer-based static method of calculation for design of engineering structures. E. Anderegger, R. Theiler. HRIS 25. IRRD 700349. ACTIVE

(3) Reinforced Concrete Supports. Determination of the support and deformation behavior of rinforced concrete supports under short and long-term loading. W. Thuerlimann. HRIS 25. IRRD 700350. ACTIVE

(4) Prestressed Slabs. Study of the support and fracture behavior on bending and the punching performation of prestressed slabs having injected and non-injected prestressed members. W. Thuerlimann. HRIS 25. IRRD 700351. ACTIVE

1. e. (5) Torsion in Reinforced and Prestressed Concrete Engineering. Determination of support and failure behavior of open and closed cross-sections subjected to torsion, transverse force and bending stresses. W. Thuerlimann. HRIS 25. IRRD 700352. ACTIVE

(6) Shear and Transverse Bending. Theoretical and experimental explanation of cross-sectional resistance of main girder webs in prestressed concrete bridges subjected to interactive loading by longitudinal shear and transverse bending. C. Menn. HRIS 25. IRRD 700353. ACTIVE

(7) Longitudinal Shear, Transverse Bending and Transverse Prestressing in Pressure Plates of Concrete Girders. Theoretical and experimental study of the behavior of concrete girders. H. Bachmann. HRIS 25. IRRD 700354. ACTIVE

(8) Long-Term Tests on Partially Prestressed Lightweight Concrete Beams. Study of the long-term behavior of such beams under working loads. H. Bachmann. HRIS 27. IRRD 700355. ACTIVE

(9) Basic Studies of the Safety Problems Associated with Engineering Structures. Clarification of the safety problem in relation to the whole structure on the basis of a complex analysis of damage. E. Schneider. HRIS 25. IRRD 700356. ACTIVE

(10) Dynamic Behavior of Lightweight Concrete Structures. Theoretical and experimental study, with special reference to earthquake loads. H. Bachmann. HRIS 25. IRRD 700357. ACTIVE

(11) Fatigue of Reinforced Concrete and Prestressed Concrete Structures. To expand the knowledge of the fatigue behavior, by means of theoretical and experimental studies of bearing and fracture behavior under repetitive loading. B. Thuerlimann, R. Frey. HRIS 25. IRRD 701944. (Citations) ACTIVE

f. Institute of Transportation and Traffic Engineering: ETH Hoenggerberg, CH-8093, Zuerich

(5) Cost-Benefit Analysis of Traffic. To obtain more precise and applicable values covering important factors. M. Rotach. HRIS 15. IRRD 700377. ACTIVE

(6) Modal Split in Relation to Various Parameters. To develop a self-calibrating program package for use by traffic planners in calculating modal split for regional traffic plans. C. Hidber. HRIS 55. IRRD 700358. ACTIVE

(7) Information Networks. Development of file system containing all data relevant to traffic planning so it can be supplied without too much time and effort. F. Karli. HRIS 11. IRRD 700359. ACTIVE

(8) Interactive Optimization of Traffic Flows in a Network. To develop an interactive program which facilitates dialogue between traffic planner and computer to optimize signal controlled traffic networks. F. Karli. HRIS 54. IRRD 700360. ACTIVE

(9) Traffic Engineering Studies within the Framework of the TEMPO 100 Test. To clarify the effects of recommended standard TEMPO 100 on traffic flow. K. Dietrich, P. Hehlen, F. Huerlimann. HRIS 55. IRRD 700361. ACTIVE

(10) Sensitivity Analysis Applied to Freight Transport. To examine the accuracy and significance of the freight transport model developed within the framework of the Freight Transport Commission of Switzerland. F. Gerber. HRIS 13. IRRD 700362. ACTIVE

SWITZERLAND (contd)

1. f. (11) Determination of Optimum Sizes of Towns: Traffic Area. To develop evaluation criteria, comparative variables and rules of structure for towns of optimum size, with reference to the area of traffic. M. Rotach. HRIS 16. IRRD 700363. ACTIVE

(12) Use of Transport Modes. To describe the use of conventional and unconventional transport modes. F. Kobi. HRIS 16. IRRD 700364. ACTIVE

(13) Traffic and Communication. Study of the relations between communication and traffic, particularly ways of substituting directional traffic and actual physical local changes. B. Heinz. HRIS 54. IRRD 700365. ACTIVE

(14) Audio-Visual Illustration of Planning Procedures. Illustration of planning procedures using audio-visual means and aimed primarily at students of all grades. M. Rotach. HRIS 12. IRRD 700366. ACTIVE

(15) Study of the Changes in Driver Behavior as a Result of Speed Limit TEMPO 100 (Outside Built-Up Areas) and TEMPO 130 (On Motorways) and Their Effects on Traffic Flow. Study to include speed distributions for various traffic volumes and road types, overtaking maneuvers, headway distribution and formation of lines. M. Boesch, K. Dietrich. HRIS 52. IRRD 700367. COMPLETE

(16) Diagram of Visibility Distances. A revision of standards for stopping distances and visibility distances on curves. HRIS 21. IRRD 700334. ACTIVE

(17) Speeds on Bends of Main Roads. H. P. Lindenmann, B. Ranft. HRIS 55. IRRD 701603. ACTIVE

(18) Public Passenger Transport Traffic Counts. To develop guidelines for carrying out traffic counts in public transport. H. Braendli, R. Siegrist. HRIS 16. IRRD 701957. COMPLETE

(19) Network Building. To prepare a guide containing the sequences of planning justifications, examples and characteristic values for supplementing and restructuring existing networks for areas containing up to 30,000 places of residence or work. M. Rotach, K. Werdin. HRIS 12. IRRD 702070. ACTIVE

(20) Examples of Structurally Integrated Streets. To develop general principles related to planning and technical and economic realization of the requirements of urban construction and environmental protection for integrated construction of roads and other public or private structures. M. Rotach, K. Infnager, R. Zeltner. HRIS 12. IRRD 702071. COMPLETE

New Project

(21) Relations Between Settlement, Traffic Supply and Traffic Demand. To define settlement, supply and demand, classify relations and interactions into individual factors and evaluate the significance of and possibility of forecasting the factors. M. Rotach, H. Bruderer, M. Jenni. HRIS 13. IRRD 702401. ACTIVE

g. Dept. of Materials Science: ETH-Honggerberg, CH-8093, Zurich

(1) Research on the Resistance of Concrete to Frost and Deicing Salt. To clarify the causes and mechanisms of frost and deicing salt action on concrete. HRIS 40. IRRD 700345. ACTIVE

(2) Resistance of Concrete to Frost and Deicing Salt. To obtain more in depth knowledge of the real factors which cause damage when frost and deicing salts act on concrete. A. B. Harnik. HRIS 32. IRRD 702072. ACTIVE

New Project

1. h. Institute of Geodesy and Photogrammetry: ETH Hoenggerberg. CH-8093. Zuerich.

(1) Dynamic Recording of Profile on Roads. To develop and construct an electronic system of recording the transverse profiles of roads in the presence of traffic travelling up to 80km/h. S. Barandum. H. Matthias. HRIS 24. IRRD 702407. ACTIVE

2. Federal Institute of Technology of Lausanne (Ecole Polytechnique Federale de Lausanne) 33 Av. de Cour. Lausanne 1007.

a. Institute of Transportation and Planning. G. C. B. - Ecublens. CH-1015. Lausanne

(1) Accidents Involving Crash Barriers. To determine the nature of the damage to vehicles and barriers. M. Bovy. D. Genton. HRIS 51. IRRD 700381. ACTIVE

(8) Study of the Effects of the Geneva-Lausanne Motorway. To examine deleterious and beneficial, direct and indirect, immediate and long-term effects of motorway construction on the spatial, economic, social and cultural development of a region and its environment. L. Veuve. P. H. Bovy. F. I. Perret. HRIS 15. IRRD 500607. ACTIVE

b. Laboratory for Soil Mechanics. GCB - Ecublens. CH-1015. Lausanne

(3) An Examination of the Plate Bearing Test. Model tests to derive a theory for calculation of deformation and strain. E. Recordon. H. Grob. HRIS 63. IRRD 700382. COMPLETE

(5) Frost Heaving in Roads. To find extent and distribution of heaving. to determine the permissible degree of heaving that will not seriously damage paving. E. Recordon. HRIS 64. IRRD 700383. ACTIVE

(6) Thermal Insulation of Roads. Tests and measurements of frost penetration into roads in which insulating materials had been incorporated. and development of a design method for frost blankets based on climatic and geotechnical conditions. E. Recordon. HRIS 64. IRRD 700081. COMPLETE

(7) Seepage Materials for the Construction of Road Drainage. Studies of the efficiency of seepage concrete, perforated pipes and similar materials used in road drainage, and development of specifications for them. J. Despond. HRIS 22. IRRD 700084. ACTIVE

(8) Dynamic Loading Tests for Compaction Control. Development of geophysical methods of frost depth measurement, with the aim of developing a simplified way of controlling the compaction of the foundation layer of roads by means of dynamic loading tests. D. Bovet. H. Bendel. HRIS 62. IRRD 700091. ACTIVE

(9) Stability of Shallow Highway Tunnels and Surface Settlement. Determine the influence of thickness of cover and the construction method on the stability of shallow tunnels and on surface settlements. F. Descoeudres. P. Egger. HRIS 63. IRRD 500740. ACTIVE

(10) Comparative Study of the Measurements of the Inclination of Unstable Slopes. Comparison of characteristics, ease of operation and use of different instruments for measuring movements and deformations of slopes at two locations. F. Descoeudres. C. Martin. HRIS 63. IRRD 500741. ACTIVE

(11) Revision of the Lexicon of the VSS Technical Terms. To develop a data processing system for the publication and updating of the new lexicon of VSS technical terms. M. Dysli. HRIS 11. IRRD 500879. ACTIVE

New Project

2. b. (12) Behaviour of Foundations of Structures. To determine through studies and observations of typical structures whether construction control systems are adequate or whether they should be modified to provide additional data. E. Recordon, B. Graf. HRIS 25. IRRD 500961. ACTIVE

e. Institute of Steel Structures: G.C.B. - Ecublens, CH-1015. Lausanne.

(2) Elastic and Plastic Behavior of Continuous Composite Beams. A study of the behavior, up to failure, of composite steel-concrete highway bridges. J. C. Badoux, M. Crisinel, J. P. Lebet. HRIS 25. IRRD 500742. ACTIVE

(3) Connection of Continuous Composite Beams, Its Effect on the Rigidity and Safety of Structures. To determine the real behavior of a composite beam in the neighborhood of the bearings and to show the parameters influencing this behavior. J. C. Badoux, M. Crisinel, J. P. Lebet. HRIS 25. IRRD 501257. ACTIVE

f. Research Laboratory for Construction of Transportation Facilities: Avenue de Cour 16, CH-1007, Lausanne

(1) Organization of Road Maintenance. To coordinate and rationalize the planning of the maintenance organization and the management of the operation, and to study the relation of maintenance to project design. R. Crottaz, N. Moussally, M. L. Pigois. HRIS 40. IRRD 500743. ACTIVE

(2) Projects and Principles. Theoretical research on the relationship between speed, geometry and safety, and the road user behavior to establish bases for a standard specification for all project specifications. R. Crottaz, N. Moussally, M. L. Pigois. HRIS 33. IRRD 500744. ACTIVE

(3) Upper Part of the Pavement in Very Severe Climatic Conditions. The use of test pit to study the behavior of the pavement laid on a foundation highly sensitive to frost and subjected to freezing-thawing cycles and to high temperatures. R. Crittaz, M. L. Pigois, P. Stirnemann. HRIS 24. IRRD 501258. ACTIVE

(4) Comparison of Alternative Projects. To define problems and solutions for comparing alternative highway projects. R. Crottaz, M.L. Pigois N. Moussally. HRIS 11. IRRD 501259. ACTIVE

(5) Tracking, Comparative Study of Different Test Devices for Bituminous Mixtures. To investigate the existence of a relation between the results of different tests for characterizing the tracking behavior of bituminous mixtures. R. Crottaz, M. L. Pigois, S. Huschek. HRIS 31. IRRD 500871. ACTIVE

4. FEDERAL INSTITUTE FOR TESTING OF MATERIALS AND RESEARCH (Eidgenossiche Material-prufungs und Versuchsanstalt): Uberlandstrasse 129, CH 8600, Dubendorf

(16) Requirements for Road Construction Bitumen. Studies of bitumen from various sources and manufacturers in order to create new testing and quality specifications. HRIS 31. IRRD 700194. COMPLETE

(17) Experimental Roads with Various Types of Bitumen. A study to determine whether the quality differences of bitumen established in the laboratory by means of new test methods agree with the behavior of bitumen in practice. HRIS 31. IRRD 700195. COMPLETE

4. (18) Adhesion of Bituminous Binders. Search for a suitable method of test to evaluate the adhesion of bituminous binders to stone, in order to create the principles for a new test specification. HRIS 31. IRRD 700196. ACTIVE

(19) Glued Reinforcement. Systematic studies of reinforcement subsequently glued to reinforced concrete structures by means of synthetic resins, with the aim of establishing a perfect and economically justifiable method of reinforcement. HRIS 34. IRRD 700198. ACTIVE

(20) Design of Hot-Mix Surfacing. To rewrite the requirements for hot-mix surfacings. HRIS 31. IRRD 700342. ACTIVE

(21) Statistical Quality Control of Bituminous Hot-Mix Surfacings. To establish new quality requirements and tolerances for uncompacted bituminous mixtures by statistical means. H. Fritz. HRIS 31. IRRD 700343. COMPLETE

(22) Study of the Bridge Over the Alte Glatt which is to be Demolished. Scientific studies of structure condition, vibration behavior concrete and prestressing steels, and fracture tests. M. Ladner, C. H. Weder B. Thuerlimann, A. Roesli, W. Schiltknecht. HRIS 25. IRRD 701100. ACTIVE

(23) Strength Investigations on Samples of Compacted Bituminous Mixture. To develop new methods for determination of physical characteristics which might be suitable for supplementing or replacing the Marshall test. H. Friztz, J. Junker. HRIS 31. IRRD 701101. ACTIVE

(24) Sensitivity to Impact of Road Bridges Carrying Moving Heavy Traffic. M. Ladner, R. P. Vantiene, M. A. Hirt. HRIS 25. IRRD 701664. ACTIVE

(25) Noise Model for Tunnel Entrances. To draw up a simple model for designing the entrance area of road tunnels as related to the noise levels. R. F. Hofmann, H.J. Grolimund. HRIS 27. IRRD 701945. ACTIVE

(26) Experimental Roads Laid for Observation with Different Road Bitumen: Maintenance of Condition after Five Years. To establish the conditions of five road sections that used different binders for construction prior to undertaking repair work. H. Fritz, M. Seeberger. HRIS 24. IRRD 701946. ACTIVE

(27) Mechanical Properties of Filler-Bitumen Mixtures. Detailed rheological studies of various filler-bituminous mixtures with ratios 0/100 to 75/25. H. Fritz, R. Gubler. HRIS 31. IRRD 701958. ACTIVE

(29) Cold Behavior of Bitumen. To make a more accurate study of the behavior the harder bitumens in cold weather. H. Fritz, R. Gubler. HRIS 31. IRRD 702073. ACTIVE

(30) Studies of Heavily Stressed Bituminous Motorway Surfacings. Comparative studies of these surfacings suffering various degrees of deformations. H. Fritz, M. Seeberger, M. Arnold. HRIS 24. IRRD 702074. ACTIVE

6. CONCRETE ROAD ASSOCIATION (Betonstrassen AG): Wildegg 5103, Aargau

(4) Movements at Ends of Concrete Slabs and Stresses on Joints. Measurements of movements at ends of slabs and of dynamic stresses on joints, in order to improve the durability and riding comfort of construction joints. HRIS 25. IRRD 700182. ACTIVE

7. GEOTEST AG BERN: Birkenstrasse 15, Zollikofen 3052

(2) Geophysical Determination of the Excavation Properties of Rock. Seismic tests to determine excavation properties of low classes of soil. H. Zeindler. HRIS 61. IRRD 700384. COMPLETE

7. (4) Excavation Properties of Rock. To conduct tests to correlate seismic measurements, geological and geotechnical properties, and actual excavation work in typical Swiss rocks. HRIS 61. IRRD 700335. ACTIVE

(5) Glass Wools Used in Construction. Collection of experience and data for the production of uniform quality standards relating to glass wools used in road construction. HRIS 34. IRRD 700331. ACTIVE

8. PRIVATE CONSULTING ENGINEERS

b. H. Monod - Consulting Engineer: Ch. Fontadel 4, CH-1008, Prilly

(2) Widening Roads on Curves. To obtain a basis for establishing relations between road types and road widening. HRIS 21. IRRD 700327. COMPLETE

f. Ingenieurburo J. Richter: Seestrasse 360, CH-8038 Zuerich

(3) Parking Requirements of Shopping Centers. Determination of the parking requirements, the traffic generation and other important characteristics of shopping centers of varying size, together with an evaluation of their probable effects on the road network. J. Richter. HRIS 54. IRRD 700082. COMPLETE

(4) Traffic Diversions Resulting from the Opening of Motorways. Comparison of results of automatic traffic counter stations before and after motorway opening, as well as counts on the motorway itself. J. Richter. HRIS 55. IRRD 701102. COMPLETE

g. J. E. Bonjour - Consulting Engineer: Rue du Tunnel 4, Lausanne

(1) Surveys of Frost Depths. Measurements at selected stations of frost depths to guide road design. J. E. Bonjour. HRIS 64. IRRD 700385. ACTIVE

h. R. Stoeckli: Florastr. 47, 8008, Zurich

(1) New Standards for Traffic Signals and Road Markings. To develop draft standards for signs and signals. R. Stoeckli. HRIS 54. IRRD 700386. COMPLETE

(2) Motorway Signalling. Preparation of standards for motorways and motor roads. R. Stoeckli. HRIS 54. IRRD 700387. COMPLETE

(3) Direction Sign Maps and Standards. Development of new maps and standards for direction signing which include maps of signs on motorways, direction signs at motorway interchanges, motorway forks, motorway access roads, and signs on main roads. R. Stoeckli. HRIS 54. IRRD 700087. ACTIVE

(4) Variable Signalization. Collect data on variable signal installations, test them, and recommend standards. HRIS 54. IRRD 700344. ACTIVE

i. S. Muller - Consulting Engineer: CH-1000 Lausanne, 4 Case Postale 118

(1) Protection of Wildlife on Roads. To find criteria for effectiveness and best arrangement of animal fences, etc. S. Muller. HRIS 21. IRRD 700388. ACTIVE

(2) Electric Fences for Protecting Wild Life. Participation in tests of electric fences by the German Automobile Club and cooperation in evaluation of results in order to prepare a standard for Switzerland. HRIS 21. IRRD 700183. ACTIVE

(3) Protection of Amphibians. Research into movements and behavior of amphibians to determine effective means of protecting them from death on roads. E. Sermet, C. Perret-Centil. HRIS 21. IRRD 700184. ACTIVE

8. i. (4) Recommendations for Structures to Protect Against Rockfall and Sliding Tree Stumps in the Region of National Roads. Examination of the problem, with recommendations for solutions. S. Mueller. HRIS 63. IRRD 700336. ACTIVE

(5) Study of the Behavior of Wild Life in the Presence of Traffic Along and on the Roads. Study of animal behavior with the view of controlling and improving existing standards forbidding access to the roads. S. Muller, J. Sigrist. HRIS 21. IRRD 500745. ACTIVE

k. Ing. J. E. Bonjour, Lausanne; Ing. Giudicetti, Zurich; and Ing. Descoendres, Lausanne.

(1) Preparation of Draft Standards for Dimensioning of Roads - Measurement and Observation Programs. To facilitate preparation of standards. J. E. Bonjour, Giudicetti, Descoendres. HRIS 21. IRRD 700389. ACTIVE

l. Dipl.-Ing. M. Blumer and Dipl.-Ing. H. Grunbaum; c/o Frutiger Sohne AG, Frutigenstr. 37, CH-3601, Thun

(1) The Amsoldingen Experimental Road. To study the bearing capacities of various bituminous mixes according to Swiss and AASHO Standards. M. Blumer, H. Grunbaum. HRIS 31. IRRD 7000390. COMPLETE

(2) Resistance of Surfacing to Studded Tires. Study of how the resistance of bituminous surfacing to wear by studded tires can be increased, installation of test areas on motorways having different surfacings for material tests, measurement of alteration in thickness (abrasion), measurements of skidding resistance, and traffic counts. M. Blumer, H. Gruenbaum. HRIS 24. IRRD 700086. COMPLETE

p. Ingenieurbuero Heierli AG; Culmannstrasse 56, Postfach 248, CH-8033, Zuerich

(3) Cement Stabilized Pavement. To study sensitivity of the parameters of the PCA method for thickness design and undertake possible corrections to the recommended values. W. Heierli, F. L. Yang, F. Balduzzi. HRIS 24. IRRD 701103. COMPLETE

(4) Protection Against Falling Rock. To create design principles for devices and structures to protect against falling rock. W. Heierli, A. Merk A. Temperle. HRIS 21. IRRD 701947. (Citations) COMPLETE

q. W. J. Rapp AG, Ingenieurburo; Bottmingerstr. 65, 4142 Munchenstein

(1) Hollowing-out of Summits and Sags. Determination of minimum desirable hollowing-out radii of summits and sags. H. Traber. HRIS 21. IRRD 700391. COMPLETE

(2) Protection Against Construction Noise on Roads. D. Suter. HRIS 33. IRRD 701605. COMPLETE

(3) Content of Projects, Project Stages, Illustration. H. Zuecher, J. Renz. HRIS 33. IRRD 701606. ACTIVE

s. Prof. A. Suesstrunk; Ruetistr. 13, CH-5400 Baden

(1) Problems Connected with Vibration. Collection and evaluation of data on the harmful effects of vibrations caused by various factors (traffic, construction work, etc.); the working out of recommendations relating to the probability of damage for Swiss conditions; and recommendations for measurement. A. Suesstrunk. HRIS 90. IRRD 700090. ACTIVE

8. t. S. Sulger Buel: CH-8703 Erlenbach, Weinbergstrasse 50

(1) Design of Crossfall Transitions, Water Run-off. Design of crossfall transitions with particular reference to water run-off, effect of aids (grooves, etc.) permissible waterfilm thickness and necessary minimum gradient. HRIS 22. IRRD 700199. COMPLETE

u. Ingenieurbuero R. Mueller: Scheuchzerstrasse 31, CH-8006, Zuerich

(1) Additional Lanes. Determination of the need for additional lanes, together with illustrations of geometric designs which take account of operational phases of development. HRIS 21. IRRD 700500. COMPLETE

(2) Velo and Moped Traffic in Towns. Study of the use of these vehicles in towns including their significance in traffic in relation to local functions and traffic characteristics. R. Mueller. HRIS 55. IRRD 701948. ACTIVE

v. C. de Charriere, Ingenieur Civil: CH-1141, Denens

(1) Pipe Tunnels. To determine if further intensive research is necessary in view of Swiss conditions, following study of existing documents and available literature. HRIS 33. IRRD 700332. COMPLETE

w. Seiler, Niederhauser, Zuberbuehler, Ingenieubuero AG: Jungholstrasse 6, CH-8050, Zuerich

(1) Computer Programs for Design. Establish and test suites of programs available in Switzerland for road design, for benefit of both users and producers of the programs. P. Niederhauser, R. Conzett, M. Pigois. HRIS 21. IRRD 701104. ACTIVE

(2) Use of Computer Statistics in Traffic Planning. To develop guidelines for the effective assessment of computer data for various problems associated with traffic planning. B. Albrecht, M. Schuler. HRIS 11. IRRD 702075. ACTIVE

New Project

(3) Traffic Surveys (Principles for Standardization). To improve the comparability of traffic counts and avoid inaccuracies caused by different meanings derived from various sources. C. Zuberbuehler, F. Broenimann. HRIS 55. IRRD 702406. ACTIVE

x. Robert-Grandpierre et Rapp, SA, Consulting Engineers: Avenue Ruchonnet 4, CH-1003, Lausanne

(1) Weaving Traffic. Analyze this traffic to develop a specification, in view of existing literature and standards outside Switzerland. A. Robert-Grandpierre. HRIS 55. IRRD 500608. ACTIVE

(2) Determining Traffic Capacity and Permissible Traffic Load for Road Junction. To establish a simple specification based on classification and types of junctions in existing standards. A. Robert-Grandpierre. HRIS 55. IRRD 500609. ACTIVE

y. Jud, Planungs und Ingenieurbuero: Zuercherstrasse 44, CH-8102, Oberengstringen

(1) Traffic Potential of Special Activity Centers (Industrial and Commercial Areas. E. Jud. HRIS 55. IRRD 701607. COMPLETE

8. y. (2) Demand for Parking Areas. To check values for the demand for parking areas, determine trends and work out corresponding traffic potential. operations with different types of modal split and different developments in public transport. E. Jud. C. A. Huber. HRIS 54. IRRD 702076. ACTIVE

z. Balzari, Blaser, Schudel, Ingenieure und Planer: Kramburgstrasse 14,
CH 3006, Bern

(1) Park and Ride in Small Towns. R. Lanz. E. Dinichert. F. Kobi. HRIS 16. IRRD 701608. ACTIVE

(2) Minimum Turning Radii. To draft a new version of the standard entitled "Geometry of Traffic Lanes on Bends." R. Lanz. J. Von Kaenel. M. Kaenzig. HRIS 21. IRRD 702077. ACTIVE

9. ASSOCIATION OF SWISS TRAFFIC ENGINEERS (Vereinigung Schweizerischer Verkehrsingenieure (SVI)): ETH-Hoenggerberg, CH-8093, Zuerich

(1) Traffic Distribution as a Function of Various Parameters. To evaluate recent models of traffic distribution from various countries, with a view to Swiss application. Committee 5. HRIS 55. IRRD 700392. ACTIVE

(2) Optimum Distances Between Stops for Public Road Transport. To assess various factors which influence choice of distances. Committee 6. HRIS 16. IRRD 700793. ACTIVE

(6) Motorway Interchange Control - Coordinated Urban Traffic. A study to coordinate control of heavy traffic motorways and urban traffic. the study to comprise: establishment of measured values in relation to control criteria; signals for use on motorways; design, dimensions, control of the signals; permissible speeds; effectiveness of time, research into causes and influence on road safety. HRIS 54. IRRD 700189. ACTIVE

(8) Capacity of Road Networks in Urban Agglomerations. To work out practical method of evaluating different road networks with respect to their capacity or permitted loading. C. Zuberbuehler. HRIS 55. IRRD 701105. COMPLETE

(9) Criteria for the Creation of Bus Lanes. Prepare clear criteria as a decision aid in checking correctness and usefulness of traffic policy aims and clarify possible use of bus lanes. S. Unger. O. Keller. H. Braendli. C. Mariotta H. Spreiter. HRIS 16. IRRD 701106. COMPLETE

(10) Short-Haul Freight Transport: Determining Factors. Obtain data on potential and distribution of short-haul as a basis for deriving regional transport plans for all transport. E. Stadtmann. J. Bernath. M. Eggenberger. HRIS 11. IRRD 701107. ACTIVE

(11) Revision of the Guidelines for Designing a Traffic Signal Facility. To revise the guidelines based on seven years of practical experience since the first edition. C. Zuberbuehler. HRIS 54. IRRD 701108. ACTIVE

10. ASSOCIATION OF SWISS ROAD SPECIALISTS (Vereinigung Schweizerischer Strassenfachmanner - VSS): Seefeldstr. 9, CH-8008, Zurich

(1) IRRD Documentation Service. Evaluation of the service from OECD in the Federal Administration using system developed by IBM. R. Theiler. HRIS 11. IRRD 700329. ACTIVE

b. Committee 9: Same address.

(1) Numerical Tables for Retaining Walls, Vol. 2. Aids to calculation for the solution of stability problems. Hugi. Bendel. HRIS 62. IRRD 700394. ACTIVE

SWITZERLAND (contd)

10. c. Geotest Ag Bern: Birkenstrasse 15, Zollikofen 3052

(1) Standards for Soil Stabilization. The drafting of new standards for stabilization with lime, bitumens and cement. H. Zeindler. HRIS 62. IRRD 700395. COMPLETE

11. STATE SCHOOL OF HORTICULTURE (Kant. Gartenbauschule): Oeschberg, Bern

(1) Grass Planting on Green Strips in Road Construction. Methods of sowing, selection of seed mixtures, winter survival, weed killers, erosion, and maintenance, Wettstein. HRIS 23. IRRD 33196. ACTIVE

13. VIBROTEST-ORGANIZATION FOR VIBRATION MEASUREMENTS: Birkenstrasse 15, CH-3052, Zollikofen.

(1) Quality Control by Means of Vibration Measurements. Testing of American and German equipment to determine the most suitable apparatus for rapid measurement of deflections. H. Zeindler. HRIS 33. IRRD 56035. ACTIVE

14. JENNI AND VORKEES, CONSULTING ENGINEERS: Mutschellenstrasse 21, CH-8002, Zurich

(1) Standards for Urban High-Capacity and Main Roads. To develop standard designs for the restriction of lateral access to such roads. M. Jenni. HRIS 21. IRRD 700398. ACTIVE

(2) Pedestrian Precincts in Swiss Towns - Collection of Examples. To collect examples of partially or completely car-free business zones and analyze their effects. R. Chevre. HRIS 16. IRRD 70194. ACTIVE

19. BUREAU DES AUTOROUTES (Motorways Bureau): CH-1700, Fribourg

(1) Control of the Laying of Stabilized Materials. To improve the control of the process for laying such courses and achieve greater uniformity in strength characteristics. HRIS 33. IRRD 700328. ACTIVE

20. CELLERE ZENTRALVERWALTUNG AG: Lukasstrasse 21, Ch-9009, St. Gallen.

(1) Bulk Density of Vibrated Aggregate Materials. To derive principles for a procedure to determine bulk density of vibrated aggregate materials. R. Haeni. HRIS 35. IRRD 700341. ACTIVE

21. SWISS TAR INDUSTRY, LTD. (Schweizer Teerindustrie AG): Ch-4133, Pratteln.

(1) Regaining Binders from Bituminous Surfacings. To recover binders from bituminous surfacings so that their properties in the finished surfacings and the modifications to the binder which have occurred can be established and evaluated. E. Fetz. HRIS 31. IRRD 700340. ACTIVE

(2) Modification of Bitumen by Means of Admixtures. Evaluation of tests on properties of modified binders. HRIS 31. IRRD 700330. ACTIVE

22. SWISS ADVISORY CENTER FOR ACCIDENT PREVENTION (Schweizer Beratungstelle fur Unfallverhuetung): Laupenstrasse 9, Ch-3001, Bern

(1) Study of the Change in Overall Accident Occurrence and Accidents on Selected Roads Outside Built-Up Areas as a Result of TEMPO 100 and TEMPO 130 on Motorways. Determine relationship between accidents, injuries and fatalities and type of road, speed distribution and traffic volume. P. Hehlen. HRIS 51. IRRD 700371. COMPLETE

23. INSTITUTE FOR APPLIED PSYCHOLOGY (Institute fur Angewandte Psychologie): Merkurstrasse 20, Ch-8032, Zurich

(1) Study of the Acceptance and Use of the Experimentally Introduced General Speed Limit Outside Built-Up Areas by the Swiss Population. To determine the changes in attitudes of people with respect to speed limits. F. Huerlimann. HRIS 54. IRRD 700732. COMPLETE

24. SWISS FEDERAL INSTITUTE FOR ROADS AND RIVER ENGINEERING Monbijoustrasse 40 CH-3003, Bern

(1) Design of the Pavement (Determination of Heavy Vehicle Loads). Determination of heavy vehicle loads by means of a built-in electronic weighing device to serve as basis for working out assumed loads for pavement design. F. Ruckstuhl F. Waelchli. HRIS 24. IRRD [illegible]1109. ACTIVE

25. ASSOCIATION OF SWISS ENGINEERS AND ARCHITECTS (SAI) Selnaustrasse 16 CH-8039 Zuerich

(1) Standard Position Catalogue on Underground Civil Engineering. R. Ruckli H. Grossen. HRIS 63. IRRD 701609. ACTIVE

26. SWISS ASSOCIATION OF HIKINGPATHS: Im Hirshalm 49, CH-4125, Riehen

(1) Effect of Road Construction of the Swiss Network of Footpaths. H. Aerni. HRIS 17. IRRD 701612. ACTIVE

28. T. R. SCHNEIDER, BERATENDER GEOLOGE: Ruetihofstrasse 53, CH-8713 Uerikon.

(1) Black Ice Warning Equipment. To make a survey of the state of development of black ice warning equipment and experience gained in the installation of such equipment. O. Schmid. HRIS 40. IRRD 701951. ACTIVE

30. BUETLER U. GLASER AG. PLANER U. INGENIEURE St. Jakobsstrasse 2, CH-4132, Muttenz

(1) Parking Space Rationing as a Means of Controlling Traffic. To work out a practical method for determining traffic volume resulting from supply of parking places parking behavior and rationing of parking places. M. Glaser. HRIS 54. IRRD 701953. ACTIVE

31. CELLERE U. CO. AG.: Zuercherstrasse, CH-8500, Frauenfeld.

(1) Design of Freight and Local Roads. To design and compare various road bases and surfacings on these roads, including economics of development construction and maintenance. R. Soppelsa, J. Lampe. HRIS 21. IRRD 701954. ACTIVE

32. R. BURGER, INGENIEUR: Alberich Zeysseigstrasse 53, CH-5430, Wettingen

(1) Ventilation of Underground Structures (Swiss Standard SIA 196). To consider definitions and concepts associated with ventilation of structures, design of systems, including design equations, underground airflow, operating pressures, specifications, etc. R. Birger. HRIS 25. IRRD 701955. ACTIVE

33. BARBE AG, INGENIEUR-UND PLANUNGSBUERO: Zollikerstrasse, CH-8008, Zuerich.

(1) Probable Traffic Loading in Residential Areas. To clarify whether and how the concept of "probable Loading" can be established as a standard for assessment together with permissible loading. H. U. Scherrer, D. Buchhofer H. J. Otto. HRIS 55. IRRD 701956. ACTIVE

33. (2) Slow Vehicles in Traffic. To develop data for the revision of the Swiss standard on crawler lanes. H. B. Barbe, B. Wuest. HRIS 21. IRRD 702078. ACTIVE

34. SA Transitec SA Traffic Engineers: Av. de Riant-Mont 6, CH-1004, Lausanne.

New Project

(1) The Role of Taxis in Urban Transport. To define the role of taxis as modes of transport in urban areas and possible evolutions in the design of taxi services. P. Blanc, P. Glayre. HRIS 13. IRRD 500960. ACTIVE

35. ROAD ADMINISTRATION AARAU: Buchenhof, CH-5000, Aarau.

New Project

(1) The Effect of Construction Site Compaction on the Mechanical Properties of the Incorporated Layer. To ascertain whether the same type of compaction (rollers) could result in different mechanical properties as a result of different compaction techniques (vibratory, smooth wheeled or rubber tired rollers). C. Angst, S. Olliger. HRIS 62. IRRD 702404. ACTIVE

36. FEDERAL AGRICULTURAL RESEARCH STATION: Department of Vertebrate Zoology: Changins, CH-1260, Nyon

New Project

(1) Small Mammals and Motorways. To inventory small mammals living along motorways and develop methods of surveillance of and protection against damage to vegetation in relation to maintenance techniques. J. Bourquin. HRIS 23. IRRD 500962. ACTIVE

37. Clement and Bongard Consultants: Rue du Botzet 3, CH-1700, Freibour.

New Project

(1) Method of Delaying the Formation of Black Ice on Bridges. To increase traffic safety by delaying formation of black ice on bridges until it forms on the pavement and to initiate the use of protective method (deicing salts) at different times. B. Clement, J. Bonjour. HRIS 40. IRRD 500963. ACTIVE

TANZANIA

Supplementary Survey - 1980

J. Mkama

The 1980 survey of Tanzania was reported by Mr. J. Mkama, Director, Surface Transportation, Ministry of Communications and Transport. Four projects are reported, all of which are shown to be complete.

1. MINISTRY OF COMMUNICATIONS AND TRANSPORT: P.O. Box 9144, Dar-es-Salaam

   (16) Annual Review of the Communications and Transport Sector May 79. Annual review of Sector to identify and eliminate operational problems. HRIS 11. COMPLETE

2. MINISTRY OF LANDS, HOUSING AND URBAN DEVELOPMENT: Dar-es-Salaam

   (3) UHURU Corridor Regional Physical Plan. Develop Regional/Zonal physical planning approach to a wide variety of factors including land use, communication and transportation for the UHURU corridor. HRIS 12. (Citations) COMPLETE

3. MINISTRY OF WORKS: P.O. Box 9423, Dar-es-Salaam

   (12) Feasibility Study for Improvement of Makambako-Songea Road-Km. 322. Provide decision basis on design and construction options to include costs for each option related to construction, maintenance, vehicle operation and management and supervision. Howard Humphreys & Sons. HRIS 12. COMPLETE

4. EASTERN AND SOUTHERN MANAGEMENT INSTITUTE: P.O. Box 9030, Arusha

   (1) Transport as a Factor Affecting the Efficiency of the Internal Trade System in Tanzania. Examine transport problems of the Internal Trade System including road, rail, lake and coastal waters to determine methods of efficiency improvements and cost control. East and Southern African Management Institute. HRIS 15. COMPLETE

THAILAND

Supplementary Survey - 1980

Sukhum Junhaman

The 1980 survey of Thailand was reported by Mr. Sukhum Junhaman, the Executive Director of the Better Roads Association of Thailand. Twenty-five active projects are listed.

3. DEPARTMENT OF HIGHWAYS: Sri-Ayuthia Road, Bangkok

(76) The Behavior of Road Embankment under Flood. To evaluate the properties of the pavement structure and the subsoil by coring before and after flooding. V. Poopath, S. Leerakomsan. HRIS 24. ACTIVE

(77) Dynamic Response for Pavement Evaluation and Design. Correlate the Benkelman Beam deflections with dynamic measurements on different types of pavement structure and foundation. V. Poopath, S. Leerakomsan. HRIS 24. ACTIVE

(78) Measurements and Improvements of Road Surface Skid Resistance in Thailand. To test skid resistance of various road surfacings by using the side-force test trailer and the British portable tester. C. Sukhawan. HRIS 24. ACTIVE

(79) Design and Performance of Roadway Pavement in Thailand. Review and make recommendations of the design of roadway pavement including performance and environmental factors. N. Rananand, T. Ruenkrairergsa. HRIS 24. ACTIVE

(80) A Study of Relationship Between Traffic Speeds and Road Surface Roughness. To measure traffic speeds and road surface roughness on various types of roads in Thailand. C. Sukhawan, S. Chaichotechuang, O. Prottasen. HRIS 24. ACTIVE

(81) Study of Highway Service Life by Deflection Criteria. To investigate and compare existing road lives and the theoretical design values. N. Rananand, S. Kangvanpanich. HRIS 24. ACTIVE

(82) Optimum Overlay Cross-Section on Flexible Pavement. Investigate outer edge pavement failures caused in part by outer wheel loads to determine if tilt caused by slope is a factor. R. Stayu. HRIS 24. ACTIVE

(83) Flexible Pavement Life and Maintenance Rating Methodology. A review of the inter-relationship between serviceability, deflection, pavement life, vehicle operating cost and periodic maintenance. HRIS 24. ACTIVE

(84) Use of Rigid Structure on Pile in Soft Clay Area as Embankment. Problem in the design of pavement on soft clay area will be studied by the application of Plate theory. S. Aritajati, P. Pudhaphongsiriporn. HRIS 24. ACTIVE

(85) Performance of Soil-Cement Road in Thailand. Evaluate performance of soil-cement roads by combining deflection, rut depth, surface irregularity, traffic volume and environmental data. N. Rananand, T. Ruenkrairergsa. HRIS 24. ACTIVE

(86) Settlement of Bridge Approach Embankment. Evaluate the settlement rate of each type of subsoil treatment used at bridge approaches. V. Poopath, S. Leerakomsan. HRIS 63. ACTIVE

(87) Computerized Design for Post - Tension Prestressed Concrete. Prestressed concrete beams and slabs will be designed by electronic digital computer for simplification and to save time. P. Pudhaphongsiriporn, N. Palchan. HRIS 25. ACTIVE

3. (88) Study of the Concrete Strength at Various Curing Times. To test strength of concrete cubes of size 15x15x15 Cm. at different ages for comparison against values stipulated by the Department of Highways. N. Rananand, P. Pudhaphongsiriporn, N. Palchan. HRIS 32. ACTIVE

(89) A Study of Corrugated Sheet Steel Beams for Highway Guardrails. To investigate the damage to corrugated sheet steel beam guardrails after accidents. C. Sukhawan, S. Chaichotechuang. HRIS 34. ACTIVE

(90) Geotechnical Properties of Lateritic Soil in Thailand. To study the formation and geotechnical properties of lateritic soil in Thailand in the context of road construction. T. Ruenkrairergsa. HRIS 61. ACTIVE

(91) Creep Behavior of Residual Soil in Northern Thailand. Creep behavior of different types of soil is investigated to determine the strain rate at various stages of deformation. T. Ruenkrairergsa. HRIS 61. ACTIVE

(92) Stability Improvement of Loosely Compacted Soil by Lime Stabilization. Study of the strength increase of loosely compacted fill of embankment in mountainous terrain due to the migration of lime in the holes drilled in the studied slope. T. Ruenkrairergsa, S. Sriwarakool. HRIS 62. ACTIVE

(93) Statistical Evaluation of the CBR Values of Thailand Soil. Stepwise multiple regression analysis in predicting the CBR of subgrade soils with correlations for other types of soil included. T. Ruenkrairergsa. HRIS 61. ACTIVE

(94) Strength Characteristics of Compacted Granitic Soils. Study of the strength characteristics of compacted granitic soil formed in the North and the Peninsula of Thailand to increase knowledge and information concerning this type of soil. T. Ruenkrairergsa, K. Petchket. HRIS 62. ACTIVE

(95) Strength Characteristics of Cement Stabilized Granitic Soil. Study of the strength characteristics of compacted cement stabilized granitic soil for consideration as use for base course. T. Ruenkrairergsa. HRIS 62. ACTIVE

(96) Stability of Granitic Soil Mixed with Asphalt Cement. Study of the stability of granitic soil mixed with asphalt cement by the Marshall method for use as surface on low volume roads. T. Ruenkrairergsa, P. Vorasart. HRIS 62. ACTIVE

(97) Permeability of Compacted Granitic Soil. A study of the permeability of different grades of granitic soil compacted to various densities for statistical evaluation. T. Ruenkrairergsa. HRIS 62. ACTIVE

(98) Lime Migration in Compacted Granitic Soil. Study of in-situ strength parameters, water content, pH and lime content at some distance from the lime source of granitic soil compacted to different densities. T. Ruenkrairergsa. HRIS 62. ACTIVE

(99) Stability of Cut Slope in Some Weathered Rocks. An analysis of the stability of cut slope in selected weathered rocks in which the slopes have different angle of inclination, shear strength and types of rock. T. Ruenkrairergsa. HRIS 63. ACTIVE

(100) Vertical Drain and Base Sheet as a Soft Subsoil Treatment. An evaluation of the effectiveness of vertical drains and base sheets installed beneath a test embankment to improve soft subsoil properties. V. Poopath, S. Leerakomsan. HRIS 63. ACTIVE

TUNISIA

Resurvey - 1980

Nicolas E. Manasseh

The 1980 survey of Tunisia was made by Professor Nicolas E. Manasseh and shows 29 projects, 18 being reported for the first time, with 8 listed as complete. Special thanks for assistance is extended to Mr. M'Hamed Soula, Ing. General Directeur des Ponts et Chaussees; Mr. Mohamed Kribi, Assistant to the Directeur, and Mr. Abduljalil Hamourni, Chief of the Laboratory.

1. MINISTERE DE L'EQUIPEMENT: Cite Jardins, Tunis

a. Laboratoire des Ponts et Chaussees: Route de Zaghouan, Tunis

(2) Comparison between Marshall and Duriez Stability Tests for Bituminous Materials. To find which test is preferable for the climatic conditions of Tunisia, or whether they are both necessary. Boussaidi, A. Hamrouni. HRIS 31. COMPLETE

(3) Laboratory Investigation of Gravel, Sand and Tuff Stabilized with Blast Furnace Slag. A study of the effect of temperature variation on strength and shrinkage of the stabilized material. A. Hamrouni. HRIS 62. ACTIVE

(4) Behavior of Prime Coat on Asphaltic Concrete Layer. A study of use of a prime coat to protect the base course of a layered asphaltic concrete pavement from traffic damage, and to permit the base to be well-compacted. A. Hamrouni. HRIS 31. INACTIVE

(6) Use of Sand, "Tuff" Soil and Blast Furnance Slag in Reinforcing Pavement. Experimental section of pavement containing 65% beach sand, 19% "tuff", 14% blast furnance slag and 2% lime. Will be observed and inspected regularly. A. Hamrouni, C. Salah. HRIS 33. ACTIVE

(7) Planning an Economical Causeway Across Lake Jerid. Observation of a causeway constructed of local material rich in gypsum as a base course as to effect of salt in the lake water on the fill and on the surfacing. A. Chammari, A. Hamrouni. HRIS 62. ACTIVE

New Projects

(8) Earth Roads in Rural Districts. A study in cooperation with the World Bank to extend farm to market movement using low-cost earth roads. Staff. HRIS 12. ACTIVE

(9) Super Highway Tunis-Turki. To plan, design and select construction materials for 39 Kms. of a super highway forming part of the important southern exit from the capital. M. Aiche, A. Hamrouni. HRIS 12. ACTIVE

(10) A Bridge Over the Bizert Channel. A study resulting in the design of a Bascule bridge with a span of 75 meters, flanked on both sides by viaducts each over 100 meters in length. M. Achour and Consultants. HRIS 25. COMPLETE

(11) Use of Phospho-Gypsum in Road Construction. To investigate the possibility of using phospho-gypsum in embankments or as a sub-base, either alone or with other substances. L. Lamouri, M. Othman, A. Hamrouni. HRIS 34. ACTIVE

(12) Survey of Local Materials. To locate materials for use in road construction, identify them, study their physical properties and the economic factors in their transport. A. Hamrouni, C. Salah. HRIS 61. ACTIVE

1. b. Direction des Ponts et Chaussees: Cite Jardins, Tunis

(1) Traffic Survey and a Transportation Plan for Tunisia. A five year traffic survey on the more representative sections of the road network to forecast future needs; investigation of geometric and structural road conditions; establish program for priority of improvements. R. Mezghanni, M. Ghorbal. HRIS 12. ACTIVE

(3) To evaluate the Adequacy of the Street Systems in Five Cities. To determine present and future needs of the systems in the five cities and establish priorities for orderly improvements. A. Chammari, A. Hamrouni and consultants. HRIS 13. COMPLETE

(4) Pilot Study for Establishing a Program for Farm Roads. To consider the improvement of some 1,000 kms of farm tracks to determine an economical approach to the need to facilitate transport of agricultural products. A. Chammari, A. Hamrouni and consultants. HRIS 15. COMPLETE

New Projects

(8) A General Road Modernization Scheme - 3rd Phase. Investigation of important existing roads to strengthen pavements, correct defective geometrical elements and suggest new alignments; in certain cases build by-passes. Staff and Consultants. HRIS 12. ACTIVE

(9) Touristic Roads in the Desert. To study for the National Council for Tourism the possibility of building a desert circuit road connecting important historical sites. Staff. HRIS 12. ACTIVE

(10) A Program for the Improvement of Farm Roads. To investigate an additional 3700 Kms. of farm roads and tracks and propose methods which can improve them economically. A Chammari and Consultants. HRIS 12. ACTIVE

(11) Evaluation of Traffic Survey Data. To study results of traffic survey and vehicle counts, determine present composition and future trends in vehicle ownership, and detect ranges of axle loading. R. Mizghani and Staff. HRIS 13. ACTIVE

(12) A Physical Plan for Tunisia. A study of present and desirable land use in view of the high increase in population and the movement towards the capital and other coastal cities. B. Tumakti and Staff. HRIS 13. COMPLETE

(13) A Manual for the Design of Intersections and Interchanges. To review present practices in the design of intersections and interchanges, and produce a manual for future use in the planning of approaches. Staff. HRIS 21. ACTIVE

(14) A Manual for the Design and Strengthening of Highway Structures. Create a manual for strengthening present highway structures to meet modern traffic and design of new ones; record and collect information on the flow characteristics of rivers and streams. Staff. HRIS 25. ACTIVE

(15) A General Maintenance Policy. To establish a long range maintenance policy, inspect the road network and draw up a program for repair. Staff. HRIS 40. ACTIVE

(16) Road Maintenance Cost. To review increases in maintenance costs during recent years and attempt to estimate future costs for budgetary purposes. R. Mizghani and Staff. HRIS 40. ACTIVE

(17) Road Accidents in Tunisia. To review accident records, detect causes which can be remedied by improving geometrics of dangerous locations, suggest changes in design, and establish procedures in road marking. R. Mizghani and Staff. HRIS 51. ACTIVE

1. b. (18) Highway Capacity Manual. To prepare a manual on highway capacity for the Tunisian road network for the use of planners and designers. Staff. HRIS 55. ACTIVE

(19) Urban Motorways for the City of Tunis. To plan a system of urban freeways in the capital to take care of future needs including rapid exits and by-passes and to improve congestion in the heart of the city. Consultants and Staff. HRIS 12. ACTIVE

(20) Flood Prevention. A study to devise methods of protecting the road between Enfideville and Sfax from inundation through new drainage structures and realignment of certain parts. Staff. HRIS 22. COMPLETE

2. DIRECTION D'ETUDES ET DES TRAVAUX NEUFS MUNICIPALITE DE TUNIS: 6 Rue d'Athene, Tunis

(1) Traffic Planning for the City of Tunis. Study traffic conditions in Tunis, plan improvements of intersections, regulate direction of flow of traffic, recommending a system of traffic lights and signs, etc. SETEC of Paris and SOTUETEC of Tunis, consultants. HRIS 54. COMPLETE

(2) Program for the Improvement for the Streets of Tunis. To study the condition of pavements on the street systems in the city and work out a program for their repair and strengthening and to suggest extension of pavements to other places. STUDI and BCEOM, consultants. HRIS 40. COMPLETE

(3) A Program of Public Lighting in Tunis. A complete inventory of existing public lighting installed in streets and public open spaces, prepare technical specifications and a manual of instructions for selection and installation of future lighting. Societe Centrale pour l'Equipment du Teritoire (SCET), Paris. HRIS 51. ACTIVE

TURKEY

Supplementary Survey - 1980

The 1980 survey of Turkey was reported by Mr. Dincer Yigit of the General Directorate of Highways, Ministry of Public Works. Thirty-nine are reported, 20 of which are shown to be complete.

1. GENERAL DIRECTORATE OF TURKISH HIGHWAYS (Karayollari Genel Mudurlugu): Yucetepe Mahallesi, Ankara

a. Materials and Research Department: Same address

(38) Investigation of Suitability of Turkish Rock-Asphalts for Highway Construction Purposes. To investigate asphaltic binders found in different areas of Turkey to determine their suitability for highway construction. T. Balkir, A. Kececiler, C. Firat, T. Uysal. HRIS 31. ACTIVE

(39) Frost Penetration Depth Analysis in Turkey, By Physical Methods. To measure temperature variations at different points. A. Kececiler, Y. Gupsu, S. Korkmaz. HRIS 64. ACTIVE

c. Planning Department, Traffic and Transportation Studies Division: Same address

(13) Highway Redevelopment Planning Project. To reorganize the Turkish highway network into a systemical structure with new roads based on social and economic structures. Staff. HRIS 11. ACTIVE

(14) Highway Inventory Survey. To gather and classify all kinds of information on roads and computerize the data. Staff. HRIS 11. ACTIVE

(15) North-South Trans-European Motorways Project: The Results of the Traffic Surveys Held on July 5-6 and July 22-23, 1978, at the Border Crossings (Passenger Traffic). Passenger traffic volume counts and origin and destination surveys on North-South Trans-European Motorways countries. E. Kilkis. HRIS 12. (Citations) COMPLETE

(16) North-South Trans-European Motorways Project: The Results of the Traffic Surveys Held on July 5-6, 1978, at the Border Crossings (Goods Traffic). Goods Traffic volume counts and origin and destination surveys on North-South Trans-European Motorways countries. M. Imre. HRIS 12. (Citations) COMPLETE

(17) 30th Highest Hourly Traffic and the Outputs of Electronic Counter Machines. To determine the 30th highest hourly traffic count distributed by seasons, months, weeks and weekends. A. Kaya. HRIS 12. (Citations) ACTIVE

(18) Traffic and Transportation Survey, 1978. To gather yearly traffic volume counts, axle load surveys, origin and destination surveys and other highway transportation statistics. C. Ildiz, I. Kayali, E. Kilkis. HRIS 12. (Citations) COMPLETE

(19) Reorganization of Truck Transport in Turkey. To determine by questionnaire truck driver's attitudes, socio-economic level and cooperation demands. Group Study. HRIS 16. ACTIVE

(20) Identification of Hazardous Locations. To identify and reconstruct hazardour locations to reduce accidents. S. Aksit. HRIS 21. ACTIVE

(21) Road Sufficiency Study. To determine sufficiency of every kilometer of Turkish highways by measurement of their physical structure and traffic volume. Staff. HRIS 24. ACTIVE

1. c. (22) Effect of Volume on Speed at Different Roads. To determine the standard of roads and how the volume affects speed. A. Kaya. HRIS 55. (Citations) COMPLETE

3. MIDDLE EAST TECHNICAL UNIVERSITY (Ortadogu Teknik Universitesi): Ankara

(84) Feasibility Study of a Railroad Link Near Sivas Region. To conduct an economic and geologic feasibility study of a railroad link to be built near Sivas region to carry iron ore and reduce rail traffic congestion. O. Akyilmaz. HRIS 12. ACTIVE

(85) Scheduling of Buses Operating Between the City and the Campus. To distribute the buses among the bus stops existing in the University to satisfy the demand without changing the already established time-table. G. Tasim. HRIS 16. COMPLETE

(86) Scheduling of Buses Operating on the Exclusive Bus Lane Between Bahcelieules and Cebeci. To provide efficient operation of buses on the exclusive bus lane recently constructed between two important O-D points of Ankara. G. Tasim. HRIS 16. ACTIVE

(87) Comparison of Different Public Transportation Modes with Special Reference to Energy Consumption. To compare the different public transportation modes, evaluate their operational characteristics, and choose the best mode based on energy consumption. G. Tasim, M. Yeldirim. HRIS 17. ACTIVE

(88) Deformational Characteristics of Bituminous Mixtures. To introduce new techniques and testing methods for evaluation of deformational responses of bituminous mixtures under different types of loadings. H. Tapkin. HRIS 24. ACTIVE

4. TECHNICAL UNIVERSITY OF ISTANBUL (Istanbul Teknik Universitesi): Taksim, Istanbul

(36) Travel Time Values and Costs Related to Interurban Transportation Systems. An investigation of travel time savings and other benefits from expenditures on passenger and freight cars. A. Sutas. HRIS 15. ACTIVE

(37) Optimum Freight Tonnage of Trains on A Certain Railway System. To investigate operational and investment costs based on formulas relating to tonnages. S. Ozen. HRIS 15. ACTIVE

(38) Economic Speed on A Railway System Due to Operational Costs. To analyze operational and social costs of certain rail routes related to speed. Z. Tuna. HRIS 15. COMPLETE

(39) Effects of Some Water Reducing Agents on Different Turkish Portland Cement Mortars. To study the interaction between water reducing agents and portland cement mortars. M. Akman. HRIS 32. (Citations) COMPLETE

(40) History of Road Construction. To investigate the methods used for road and bridge construction under various geotechnical conditions. I. Aksoy. HRIS 33. ACTIVE

(41) Problems of Sea-Dredged Aggregates in Concrete Production. To study effects of sea dredged aggregates on strength, workability, mechanical behavior and durability of concrete. M. Akman. HRIS 35. (Citations) COMPLETE

(42) Probability of Alkali Reactivity in Dolomitic Aggregates. To research concretes manufactured with crushed dolomitic limestone and portland cement submitted to cyclic wetting-drying effects of sea water. M. Akman. HRIS 35. (Citations) COMPLETE

4.

(43) Gap/Lag Acceptance of Minor Road Drivers in Istanbul. Observation of four intersections in Istanbul and statistical analysis of those resulting data. E. Gedizlioglu. HRIS 52. ACTIVE

(44) The Practical Capacity of a Minor Road at an Uncontrolled Intersection Depending on Gap Acceptance. To study the practical capacity of a minor road at an uncontrolled intersection with a finite delay for minor vehicles depending on the gap acceptance of minor drivers. E. Gedizlioglu. HRIS 55. (Citations) COMPLETE

(45) Geotechnical Properties of Thracian Soft Clays. To conduct geological and geotechnical studies of a motorway connecting Istanbul to Bulgaria. Togrol, Saglamer, Ozudogru. HRIS 61. ACTIVE

(46) The Effect of Repeated Loading on Soil Strength. To study stress-strain behavior of soils under transient traffic loading conditions. Togrol, Ozudogru, Guler. HRIS 62. (Citations) COMPLETE

(47) The Mechanical Behavior of Frozen Ground. To study stress-strain and strength characteristics of a frozen soil under static and transient traffic loads. Togrol, Ersoy, O. Tan. HRIS 64. ACTIVE

(48) The Specific Weight of Hydrated Cements. To determine specific weight of different hydrated portland cements to calculate real value of concrete density and establish certain connections between the density and quantities of the principal components of the cements. B. Postacioglu. HRIS 32. ACTIVE

(49) Mechanical Properties of Concrete as a Function of Its Age. To identify variations in the mechanical properties of concrete according to age and curing period. B. Postacioglu. HRIS 32. COMPLETE

(50) A Study of General Forms of Non-Linear Flow Functions. General forms of non-linear core flow functions are sought, beginning with the flow functions obtained directly through standard tests. S. Ahyuz. HRIS 34. COMPLETE

(51) The Approximate Forms on the Core Functions of Non-Linear Viscoelasticity. To demonstrate that each approximate form proposed by various authors for core functions of non-linear viscoelasticity is only an arithmetic or geometric mean of the exact form and can produce a good result if and only if the stress program varies without decreasing. S. Ahyuz. HRIS 34. COMPLETE

7. TRANSPORT COORDINATION AGENCY (TCA) (Ulastirma Koordinasyonu Idaresi (UKI): 19 Mayis Meydani, No. 2, Ankara

(9) Road User Charges. A study covering the direct and indirect charges paid by the road users for highways and the corresponding expenses undertaken by the public. Staff. HRIS 16. COMPLETE

10. BOGAZICI UNIVERSITY, FACULTY OF ENGINEERING: Istanbul

(1) Asphalt Pavement in Frost. To study asphalt pavement behavior under frost conditions on the basis of indirect tensile strength and compared with the conventional Marshall test. D. Ataca, E. Yaltkaya. HRIS 31. (Citations) COMPLETE

(2) Effect of Dosage of Cement on the Compressive Strength of Concrete. To study and compare the effect of different dosages of cement in a concrete mix and different aggregates voids ratios by their compressive strengths. T. Onalan, E. Yaltkaya. HRIS 32. (Citations) COMPLETE

10. (3) Admixture Effects on Concrete. Five different additives were tested and effects compared on the workability and compressive strength of concrete. H. Bener, E. Yaltkaya. HRIS 32. (Citations) COMPLETE

(4) Penetration Resistance of Soils. Static penetration resistance of cohesive soils were tested by different penetration tests and results compared and correlated. T. Baykal, T. Durgunoglu. HRIS 62. (Citations) COMPLETE

11. THE SCIENTIFIC AND TECHNICAL RESEARCH COUNCIL OF TURKEY: Ankara

(1) Protection of the Closed Empty Spaces of Bosphorus Suspension Bridge Against Corrosion. The use of silica gel to lower relative humidity in order to protect the inner sides of the structure against corrosion has proved to be very effective. M. Alsat. HRIS 40. (Citations) COMPLETE

UNITED KINGDOM

Supplementary Survey - 1980

The Supplementary Survey of road research in the United Kingdom was carried out by the Transport and Road Research Laboratory under the direction of Mrs. P. E. Mongar, Head of the Technical Information Service and Library. TRRL is the English language documentation center for the IRRD. The report lists 289 new projects of which 20 are shown to be complete.

1. DEPARTMENT OF THE ENVIRONMENT/DEPARTMENT OF TRANSPORT: 2 Marsham St., London SWIP 3EB, England

a. Transport and Road Research Laboratory: Crowthorne RG11 6AU, Berkshire, England

(664) Road Profile Deterioration Studies. A study of the relation between the rate of profile deterioration and its effect on the rate of structural deterioration of the pavement slab. P. Jordan, D. Cooper, J. Young. HRIS 24. IRRD 606535. ACTIVE

(665) Compaction and Performance of Bituminous Bases and Basecourses. A study of the compaction and performance of coated macadams of different compositions. W. Powell. HRIS 31. IRRD 606538. ACTIVE

(666) Urban Safety Demonstration Project. Project demonstrates how safety benefits can be obtained cost-effectively. E. Dalby, R. Allsop, P. Hills. HRIS 51. IRRD 606539. ACTIVE

(667) Collapse Behaviour of Plated Steel Structures. New methods of non-linear analysis for use with the finite element method. G. Tilly, M. Crisfield. HRIS 25. IRRD 606540. ACTIVE

(668) Bridge Vibrations and Serviceability. Prediction of serviceability of existing bridges by field tests to determine the vibration characteristics of the members. G. Tilly, D. Cullington, R. Eyre. HRIS 25. IRRD 606542. ACTIVE

(669) Structural Tests on Half-Scale Model Bridge Decks. Loading tests on a series of half scale models of reinforced prestressed and composite bridge decks. K. Raithby, C. Irwin, J. Grainger, H. Howells. HRIS 25. IRRD 606543. ACTIVE

(670) Collapse Behaviour of Reinforced and Prestressed Concrete Bridges. A theoretical study of the collapse behavior on concrete slab and beam and slab bridges. M. Crisfield, J. Wills. HRIS 25. IRRD 606544. ACTIVE

(671) Buckling of Concrete. Investigation of buckling and post-buckling behavior of thin or slender concrete components and structures. K. Raithby, R. Andrews. HRIS 25. IRRD 606545. ACTIVE

(672) Abrasive Wear Research-Hydraulic Pipelines. Measurements of wear in test sections of a commercial slurry pipeline carrying sand. J. James, B. Broad. HRIS 22. IRRD 606548. ACTIVE

(673) Evaluation of Fuel-Saving Measures. Study to develop better methods of measuring fuel consumption and to evaluate various fuel saving devices. T. Williams. HRIS 17. IRRD 606551. ACTIVE

(674) Cycle Ownership and Use. Research to show the relative importance of the cycle as a mode of transport in today's transport system. S. Quenault, J. Morgan. HRIS 16. IRRD 606554. ACTIVE

(675) Pedestrian Anxiety. Home interview surveys in a number of towns to measure personal attitudes and make correlations with traffic data. D. Harland. HRIS 51. IRRD 606555. ACTIVE

1. a. (676) Pilot Study on Driving Cycle Development. Research study into new forms of driving cycles. B. Laker. HRIS 54. IRRD 606556. COMPLETE

(677) Fuel Economy Performance of Passenger Cars Over Different Driving Cycles. Project will subject a range of vehicles to known driving cycles, following standard test conditions and procedures, to measure the fuel economy performance of each of the cars, and to establish the relative performance rankings of the vehicles. B. Laker, T. Pearce. HRIS 17. IRRD 606557. ACTIVE

(678) Development of Modal Choice Models for Long Distance Travel, Using Disaggregate Estimation Methods. To develop modal choice models based on data collected by recent on board surveys and roadside interviews in a number of travel corridors. M. Langdon, R. Watson. HRIS 54. IRRD 606558. ACTIVE

(679) The Allocation of Transport Fuels to Minimize Costs. A study which aims to see whether battery electric powered UK road transport will be economically justified when natural oil becomes prohibitively expensive. B. Armstrong. HRIS 17. IRRD 606559. ACTIVE

(680) Electric Vehicle Infrastructure. To preview the consequences of a road transport fleet in the UK primarily dependent on battery electric vehicles. B. Armstrong, L. Gyenes. HRIS 53. IRRD 606560. ACTIVE

(681) Development of a Vehicle Exhaust Gas Proportional Sampler. To design and construct a sampler which will sample the exhaust gases of vehicles during road tests at a rate which is proportional to the total gas flow. D. Colwill, S. Wallin. HRIS 17. IRRD 606561. ACTIVE

(682) The Influence of Constituent Materials on the Properties of Concrete Used in Road Construction with Particular Reference to Lean Concrete Containing Pulverized Fuel Ash. To establish the properties that are most critical in the specification of concrete as an alternative to bituminous materials. R. Franklin, W. Gibbs. HRIS 32. IRRD 606562. ACTIVE

(683) The Development of a Computer System to Aid Management in Budgeting, Estimating, Planning and Resource Control for Highway Construction and Maintenance. The development of a computerized rate for the production of bills of quantities and estimates of costs and resources for highway construction. R. Hardman, B. Parmenter. HRIS 12. IRRD 606563. ACTIVE

(684) Vehicle Headlights. A program for verifying the qualities and adjustments of vehicle headlights in actual use. G. Lupton, J. Cobb, M. Crabtree. HRIS 53. IRRD 606564. ACTIVE

(685) Visual Engineering. To identify items of road and vehicle design which create visual problems. G. Lupton, J. Cobb . HRIS 52. IRRD 606565. ACTIVE

(686) Road Lighting and Accidents. To examine various lighting installations which may exhibit factors in connection with accidents on wet roads. G. Lupton, J. Cobb, P. Scott. HRIS 52. IRRD 606566. ACTIVE

(687) Patterns and Mechanism of Injury to Car Occupants. The project will relate injury severity to crash severity for frontal and side impact accidents. P. Harms, C. Hobbs, I. Jones, R. Gunn, D. Griffiths. HRIS 53. IRRD 606568. ACTIVE

(688) Road/Rail Freight Transfer. Study the scope for transferring freight that will be carried by road to rail. R. Dawson. HRIS 54. IRRD 606570. ACTIVE

(689) The Extent and Nature of Lorry Nuisance. A study of the problem and of the measures needed to control it. C. Baughan, B. Hedges. HRIS 17. IRRD 606571. ACTIVE

1. a. (690) Budget Models of Travel. A study of travel behavior and of the influence of land use. J. Downes. HRIS 12. IRRD 606572. ACTIVE

(691) Optimisation of Peak/Off Peak Buses. The development of a model to optimize the number of peak/off peak buses to produce the maximum number of passengers. F. Webster, P. Bly, R. Oldfield. HRIS 12. IRRD 606573. ACTIVE

(692) The Effect of Income on Bus Travel. A study seeking to discover whether a demand elasticity with respect to real earnings can be estimated. F. Webster, P. Bly, R. Oldfield. HRIS 12. IRRD 606574. ACTIVE

(693) Travel Demand Elasticities with Respect to Fuel. The influence on motorized travel due to increases in fuel costs has been estimated using regression analysis. R. Oldfield. HRIS 15. IRRD 606575. ACTIVE

(694) Modeling the Journey to Work. A study seeking to measure the extent of various human and personal factors which modify the journey to work pattern. J. Tanner, J. Broughton. HRIS 12. IRRD 606576. ACTIVE

(695) Social Studies of Car Use. An examination of the social factors which determine the level and pattern of car use. S. Town, G. Stokes. HRIS 15. IRRD 606578. ACTIVE

(696) The Role of Transport in Residential Location. The role of accessibility in home location choice. S. Town, L. Pickup. HRIS 15. IRRD 606579. ACTIVE

(697) Appraisal of Traffic Restraint in the Gordale Scar Area. Environmental effects of congested traffic in this area, and the likely attitudes assumed by residents and by visitors towards the problem and towards the possible access restrictions. D. Harland, P. Greening, J. Bowen. HRIS 15. IRRD 606580. ACTIVE

(698) Bangkok Traffic Management Project. Monitoring and evaluating the Bangkok traffic management project. G. Jacobs, J. Jones. HRIS 54. IRRD 606581. ACTIVE

(699) Verbal Tags for Defining Environmental Quality. A selection of items presented as steps in a verbal rating scale of standards for describing the environmental qualities of proposed trunk road design schemes. A. Mackie, A. Grigg. HRIS 12. IRRD 606582. ACTIVE

(700) Travelling Matte. A proposed display technique which allows a proponent of a highway design to simulate the appearance of a road with moving traffic in a landscape where, at present, no such road exists. D. Harland, B. Slee. HRIS 21. IRRD 606583. ACTIVE

(701) Improved Binders for Road Surfacings. Developing methods for selecting bitumens displaying improved weathering characteristics. W. Szatkowski, J. Denning, M. Daines, J. Carswell. HRIS 31. IRRD 606588. ACTIVE

(702) The Assessment of Locally Available Marl for Road Construction in Belize, Central America. Road research aimed at reducing construction costs in developing countries by making increased use of locally available materials. D. Newill, M. Stewart, T. Toole. HRIS 35. IRRD 606592. ACTIVE

(703) The Assessment of Calcretes. To establish criteria for use of calcretes as gravel surfacings or as bases in road construction in desert regions. D. Newill, M. Stewart, T. Toole. HRIS 35. IRRD 606593. ACTIVE

1. a. (704) The Suitability of Locally-Available Materials for Use in Road Construction in Ethiopia. Joint Road Research Project. A full-scale experiment to establish guidelines for the use of volcanic cinder gravels in road construction in Ethiopia. D. Newill, R. Robinson, Kassaye Aklilu. HRIS 35. IRRD 606594. ACTIVE

(705) An Examination of Weathered Basalts from Ethiopia for Low-Cost Road Construction. To establish guidelines for the selection and use of weathered basalts based on simple engineering tests. D. Newill, R. Black, D. Cawsey, P. Mellon. HRIS 35. IRRD 606595. ACTIVE

(706) Road Deterioration in Ghana. To study aspects of road deterioration and the organization of road maintenance. P. Roberts. HRIS 24. IRRD 606596. ACTIVE

(707) Cost Effectiveness of Road Maintenance Methods in Developing Countries. The effectiveness of various techniques for maintaining paved roads are being studied in terms of the reduction of vehicle operating costs. H. Hide. HRIS 40. IRRD 606597. ACTIVE

(708) Development of a Portable Instrument for Calibration and Standardization of Outputs of Different Road Surfac Roughness Measuring Instruments. Surface roughness standardization. S. Abaynayaka, G. Morosiuk. HRIS 24. IRRD 606598. ACTIVE

(709) Appropriate Technology in Highway Engineering for Developing Countries. To develop and study areas of highway design, construction and maintenance in developing countries. C. Ellis, J. Parry, P. Roberts, F. Potocki. HRIS 11. IRRD 606599. ACTIVE

(710) The Design of Strengthening Overlays for Tropical Environments. The design and performance of asphalt strengthening overlays is being carried out and monitored in Kenya and in Malaysia. H. Smith, C. Jones, J. Rolt. HRIS 24. IRRD 606703. ACTIVE

(711) Pavement Design in Tropical Environments. Studies of the performance of paved roads built in several tropical and subtropical countries are being carried out with the intent of updating and improving the present general design practice. J. Rolt, H. Smith, C. Jones, L. Hitch. HRIS 24. IRRD 606704. ACTIVE

(712) Design and Performance of Rural Roads Built by Labor Intensive Methods in Kenya. To examine the standards of low cost rural access roads, built by labor intensive methods, in relation to the subsequent performance of the roads. HRIS 24. IRRD 606705. ACTIVE

(713) Criteria for Junction Choice. Computer programs be developed to allow comparison of a wide range of junctions with regard to delays. R. Kimber, I. Burrow. HRIS 55. IRRD 606706. ACTIVE

(714) Speeds of Cars and Heavy Vehicles on Motorways in 1979. Surveying the speeds of cars and heavy vehicles in England and Wales in 1979 and comparing the results with previous surveys. N. Duncan, S. Sumner. HRIS 55. IRRD 606707. ACTIVE

(715) Pedestrian and Vehicle Delays at Pedestrian Crossings. The validation and development of computer simulation models of vehicle and pedestrian flow to simulate delays encountered at crossings. N. Duncan, M. Marlow, J. Griffiths, J. Hunt. HRIS 55. IRRD 606708. ACTIVE

1. a. (716) Studies on Junction Design for Safety (Multi-Phase Traffic Signals). To add to the current program studies of safety. C. Faulkner, R. Hall. HRIS 55. IRRD 606709. ACTIVE

(717) Trial Travel Guide. Investigation of the feasibility of producing a travel guide to facilitate the furnishing of information on two-stage journeys. P. Ellson. HRIS 12. IRRD 606710. ACTIVE

(718) The Need for Public Transport. A study of the interpretation of the meaning of the clause "needs of the community" as found in legislation requiring county councils to support public transport in their areas. H. Davies, C. Bird. HRIS 12. IRRD 606711. ACTIVE

(719) Methods of Helping Cyclists in Built-Up Areas. Research to assess various traffic management measures intended to help cyclists in built-up areas. S. Quenault, J. Morgan, R. Layfield. HRIS 12. IRRD 606553. ACTIVE

(720) Methods of Teaching Road Safety to Children (2). To compare the effectiveness of different road safety teaching methods (both pedestrian behavior and cycling) for primary school children. C. Downing. HRIS 51. IRRD 606880. (Citations) ACTIVE

(721) Methods of Improving Road Safety Education for Pre-School Children. To investigate methods of improving road safety education for pre-school children through use of an experimental traffic club. C. Downing. HRIS 51. IRRD 606881. ACTIVE

(722) Police Road Safety Education Activities. To assess a survey of police road safety education activities in terms of their effect on children's road safety knowledge and teachers' views. C. Downing. HRIS 51. IRRD 606882. ACTIVE

(723) The Visual Impact of Cars Parked in the Countryside. To rate on a scale from extremely unpleasant to extremely pleasant the impact of parked cars on the countryside using photographs viewed by residents of the area. D. Harland, C. Futers. HRIS 23. IRRD 606883. (Citations) COMPLETE

2. DEPARTMENT OF INDUSTRY: One Victoria Street, London, SW1, England

e. National Engineering Laboratory: East Kilbride, Glasgow G75 OQU Scotland

(26) Fuel Preparation and Engine Design to Improve Economy and Exhaust Emission of Spark Ignition Engines. To achieve improved fuel economy and reduced exhaust emissions through modifications in fuel preparation and engine design. I. Finlay, D. Boam. HRIS 53. IRRD 607030. ACTIVE

g. National Maritime Institute: Queens Road, TW11 OLW, Teddington, Middlesex, England

(4) Vortex Shedding and Flutter of Plate Girder Bridges. To obtain values of the fluctuating lift and moment coefficients on model plate girder bridges to compare with measurements on a previous model box girder bridge. D. Walshe, J. Hay. HRIS 25. IRRD 606541. ACTIVE

3. AGRICULTURAL RESEARCH COUNCIL: 160 Great Portland Street, London W1N 6 DT, England

e. Soil Survey of England and Wales, Rothamsted Experiment Station, Harpenden, Herts AL5 2JA England

(9) The Use of Soil Maps to Predict Soil Corrosivity. To determine the soil properties and conditions that affect corrosion of underground pipes to test utility of soil maps for predicting corrosion. M. Jarvis, D. Mackney, A. Moffatt. HRIS 61. IRRD 606745. (Citations) ACTIVE

(10) The Utility of Soil Maps in Planning and Civil Engineering. To investigate ways of interpreting soil maps at various scales for planning and civil engineering, including water regime, trafficability, erosion risk, drainage need, design, etc. M. Jarvis, D. Mackney, R. Hartnup, J. Hazelden, A. Moffatt, H. George. HRIS 61. IRRD 606746. (Citations) ACTIVE

6. BRITISH RAILWAYS BOARD, RAILWAY TECHNICAL CENTRE: London Road, DE2, SUP, Wilmorton Derby, England

(13) Plastics Feasibility Study. To investigate possible use of plastics in drive shafts, suspension elements, gears and structural foams. Research and Development Division. HRIS 53. IRRD 606865. ACTIVE

(14) Noise and Vibration. To study individual heaving protection, reduction of noise at source, vibration of buildings, structures and ground-borne vibrations. Research and Development Division. HRIS 17. IRRD 606866. (Citations) ACTIVE

(15) Structural Integrity. British Rail has a wide range of fatigue problems in bridges and many carriage components which this project will study individually. Research and Development Division. HRIS 25. IRRD 606867. ACTIVE

(16) Structural Design Criteria. To develop design methods and fatigue analysis procedures for production of more reliable and economical components and structures. Research and Development Division. HRIS 25. IRRD 606868. ACTIVE

(17) Advanced Structural Techniques. To apply alternative materials, new manufacturing techniques and evaluation of new design approaches in order to effect savings in vehicle structures and structural components. Research and Development Division. HRIS 25. IRRD 606869. ACTIVE

(18) Glass Reinforced Plastic Bridge Parapet Panels. To investigate construction by vacuum impregnation and use of glass reinforced plastic panels for bridge parapets. Research and Development Division. HRIS 25. IRRD 606870. ACTIVE

(19) Freight Transport Technology Studies. To examine a range of handling equipment less costly than cranes for expansion of rail freight activities. Research and Development Division. HRIS 12. IRRD 606871. ACTIVE

(20) Active Suspensions. To develop low cost, more effective suspensions to give improved comfort, reduced structural loads and low track loadings. Research and Development Division. HRIS 53. IRRD 606872. ACTIVE

(21) Waterproofing of Bridge Decks and Roofs. To develop sprayed waterproofing material for use on bridge decks and flat roofs. Research and Development Division. HRIS 34. IRRD 606873. ACTIVE

6. (22) Development of Structural Design and Analysis Techniques. New developments of theoretical structural analysis and design techniques to aid in design of new vehicles and vehicle components. Research and Development Division. HRIS 53. IRRD 606874. ACTIVE

(23) Railway Bridge Damage by Road Traffic. To identify rail overpasses struck by vehicles below and to develop suitable warning and diversion procedures. Research and Development Division. HRIS 25. IRRD 606875. ACTIVE

(24) Friction Brakes Investigation. Studies of improvements in friction braking materials and associated technology. Research and Development Division. HRIS 53. IRRD 606876. ACTIVE

(25) Welding of Structural Steels. Toughness and brittle zones in welded steel to be studied to provide improved specifications and data for engineers and fabricators. Research and Development Division. HRIS 34. IRRD 606877. ACTIVE

(26) Noise and Vibration. To develop more efficient acoustic design of railway vehicles for producing more comfortable vehicles for the public or present no hearing hazard to staff. Research and Development Division. HRIS 17. IRRD 606878. ACTIVE

10. BRITISH STEEL CORPORATION, TEESSIDE LABORATORIES: P.O. Box 11, TS6 6UB, Grangetown, Middlesborough, Cleveland, England

(10) Structural Steel Sections. A systematic evaluation of basic properties and service characteristics of structural sections and development and assessments of toughness in heat affected zones. Teesside Laboratories. HRIS 34. IRRD 606761. ACTIVE

11. BRITH CARBONIZATION RESEARCH ASSOCIATION: Mill Lane, Wingerworth, Chesterfield, Derbyshire S42 6JS, England

(18) The Possibilities of Modifying the Properties and Increasing the Amount of Tar-Based Binders Available by the Addition of Elemental Sulpher. To investigate tar-based binders modified by addition of sulpher due to lower costs and indicated advantages in stability and laying temperatures. W. Wilman, C. Middleton. HRIS 31. IRRD 606779. FUTURE

(19) Determination of Adjustments to Binder Contents When Using Low Temperature Tars in Place of Coke-Oven Tars in Dense Tar Surfacing and Tarmacadam. To use the Marshall test to establish the appropriate low temperature for content (by mass) in different coated materials. W. Wilman, P. Watts. HRIS 31. IRRD 606780. (Citations) ACTIVE

(20) The Production and Testing of Road Binders Made by Adding Coal Tar or Pitch to Bitumen. Principal objectives to study temperature susceptibility of current pitch-bitumens and petroleum oil resistance of the pitch-bitumens compared to high penetration bitumen. W. Wilman, C. Middleton, P. Watts. HRIS 31. IRRD 606781. (Citations) ACTIVE

16. UNIVERSITY OF BIRMINGHAM: P.O. Box 363, Edgbaston, Birmingham, B15, 2TT, Birmingham, West Midlands, England

a. Department of Transportation and Environmental Planning. Same address

(68) The Mechanisms of Injury in Serious and Fatal Pedestrian Accidents. Injury mechanisms will be investigated, particularly for children and the elderly, as well as the effect of different vehicle profiles. S. Ashton, G. Mackay, P. Harms. HRIS 51. IRRD 606569. (Citations) ACTIVE

16. d. Department of Civil Engineering: Same address

(13) Pressures on Rigid Retaining Walls. To investigate the stress distribution on a rigid vertical retaining wall in sand under surcharge loading using an instrumented laboratory model. D. Hoare, R. Suen. HRIS 25. IRRD 607044. ACTIVE

(14) Compaction of Soil. A research survey of current theory and practice in the field of compaction of soils. D. Hoare. HRIS 62. IRRD 607045. ACTIVE

17. UNIVERSITY OF CAMBRIDGE: Trumpington Street, Cambridge CB2 1PZ, England

a. Department of Engineering: Same address

(33) Simple Shear Test. To better understand response of saturated clay to cyclic loading relevant to foundations of off shore gravity structures using simple shear apparatus. D. Wood. HRIS 63. IRRD 606712. (Citations) ACTIVE

(34) Full Scale Pile Loading Tests. Field tests on steel tube piles driven into stiff clay to develop more accurate and safer methods of pile design. R. Parry. HRIS 25. IRRD 606713. ACTIVE

(35) Embankments During Earthquakes. To clock the Newmark analysis predictions against scale model embankments tested in the Cambridge university centrifuge. A. Schofield, R. James. HRIS 63. IRRD 606714. ACTIVE

(36) Model Pile Tests in Clay. To develop theories for the prediction of the behavior of piles in clay under static loads. M. Randolph. HRIS 25. IRRD 606715. ACTIVE

18. UNIVERSITY OF EDINBURGH: Old College, South Bridge, Edinburgh 9 EH8 9YL, Scotland

a. Department of Civil Engineering and Building Science: The King's Buildings, Mayfield Road, EH9 3JL, Edinburgh

(16) Transport Operation and Planning. To recognize in transport operation and planning that greater reliance will in the future have to be placed on public transport in urban areas for mass transport. A. Hendry, M. Forde, R. Birse, H. Whittington. HRIS 12. IRRD 607162. (Citations) ACTIVE

(17) Transport Systems Construction/Geotechnics. To investigate earth moving operations, the upper limits of moisture content for the reusability of cut soil as fill and the implications of the high stone content of Scottish boulder clays. M. Forde. HRIS 33. IRRD 607163. (Citations) ACTIVE

20. UNIVERSITY OF LIVERPOOL: P.O. Box 147, Brownlow Street, Liverpool L69 3BX, England

a. Department of Civil Engineering: Same address

(25) In-Place Concrete Strength Assessment. To increase understanding of existing methods of assessment of concrete strength in structures, for the development of new methods, and the assessment of reliability of predictions. J. Bungey. HRIS 32. IRRD 607159. (Citations) ACTIVE

(26) Pavement Management Cost Models. The systems approach to the development of highway pavement design and maintenance models as an aid to strategy decisions in highway engineering. G. Hall. HRIS 24. IRRD 607160. (Citations) ACTIVE

20. (27) Design of Concrete Bridge Slabs Against Shear Failure. To provide methods of analysis to predict shear distributions in cracked concrete slabs, to determine modes of shear-flexure failure, and provide guidance to designers of concrete bridge slabs. R. Cope, P. Rao. HRIS 25. IRRD 607161. FUTURE

21. UNIVERSITY OF LONDON: Senate House, London W.C.1, England

b. King's College, Department of Civil Engineering: Strand, London WC2R 2LS, England

(17) Prediction of Behavior of Road Pavements Under Repeated Traffic Loading. To develop computer models of pavement behavior based on synthesis of experimental data and pavement behavior obtained by TRRL. N. Lister, J. Dougill, E. Thrower, W. Powell. HRIS 24. IRRD 606537. ACTIVE

(18) Risk Analysis in Geotechnical Engineering. To extend and refine the bases of risk assessment by taking account of the known or presumed variability of geotechnical properties in natural or formed deposits. R. Gibson, J. Lasko. HRIS 61. IRRD 607132. ACTIVE

(19) Properties and Control of Bentonite-Cement Slurries and Grouts. A study of the properties of bentonite cement and other clay cement slurries for use as hydraulic cut-offs or grouts. S. Jefferis, G. Card. HRIS 63. IRRD 607135. (Citations) ACTIVE

c. Queen Mary College, Department of Civil Engineering: Mile End Road London, E1 4NS England

(14) Strain Gauge Development and Assessment. To research methods of measuring strain, suitable for application to foundation piles. T. Poskitt, L. Cuthbert, C. Leonard. HRIS 25. IRRD 607138. ACTIVE

(15) Back Analysis of Pile-Driving Data. To back analyze field data on stresses and accelerations by the wave equation method and produce basic soil parameters and soil resistance to driving. T. Poskitt, L. Cuthbert, J. Dolwin. HRIS 62. IRRD 607139. (Citations) ACTIVE

f. Imperial College: Department of Civil Engineering, Prince Consort Road, London SW7 2BP England

(42) Economical Rigid Beam Column Connections for Composite Frames. To develop and test characteristics of a composite beam column connection that will be economical and have specified strength and serviceability. G. Owens, P. Dowling, C. Echeta. HRIS 25. IRRD 607133. ACTIVE

h. Imperial College of Science and Technology, Department of Geology: Prince Consort Road, SW7, 2BP, London, England

(10) Mechanisms of Fracture and Friction of Crustal Rocks in Simulated Geological Environments. To predict the fracture and friction properties of granites and basalts under environmental conditions that pertain to the upper 15 km of major fault zones. B. Atkinson, N. Price. HRIS 63. IRRD 606784. (Citations) ACTIVE

u. Imperial College, Department of Aeronautics, Prince Consort Road, SW7, 2PY London, England

(3) Aerodynamics of a Bluff Body Near the Ground. To investigate by means of a wind tunnel the aerodynamics of varying shaped car bodies with a view to developing numerical models of vehicle flows that can correctly estimate dynamic forces. P. Bearman, J. Harvey. HRIS 53. IRRD 606832. ACTIVE

22. UNIVERSITY COLLEGE LONDON: Gower Street, London WC1E 6BT, England

b. Transport Studies Group: Same address

(102) Trends in Patterns of Work Trips in Selected Areas of London. Various levels of accessibility and job opportunity will be determined for various types occupations, industries and socio-economic groups. M. Mowforth. HRIS 15. IRRD 606776. ACTIVE

(103) Standard Errors of the Estimated Values in Full and Partial Trip Matrices. To obtain a confidence factor for a small unexpanded trip matrix by treating it as a three dimensional contingency table. J. Nicholl. HRIS 12. IRRD 606777. COMPLETE

(104) Modelling of Area-Wide Traffic Management and Control. Traffic management is studied from a general mathematical framework by representing the road system in a series of links and nodes. R. Allsop. HRIS 12. IRRD 606778. (Citations) ACTIVE

k. Bartlett School of Architecture and Planning: Wates House, 22 Gordon Street, WC1 H008, London, England

(2) Change and Adaption in Rural Communities. To monitor changes in attitudes towards the home community among selected samples of young rural adults in order to identify when and why decisions to migrate occur. S. Lajac. HRIS 15. IRRD 606767. ACTIVE

23. UNIVERSITY OF MANCHESTER, OXFORD ROAD: Manchester M13 9PL; AND INSTITUTE OF SCIENCE AND TECHNOLOGY: P.O. Box 88, Sackville Street, Manchester, M60 1QD, England

k. Department of Electrical Engineering and Electronics, Institute of Science and Technology: Same address

(3) Automatic Road Traffic Data Collection and Analysis. To improve image quality and speed of operation through use of a charge coupled device television camera and a pipeline configuration of microprocessors built as a front end processor. M. Hartley, P. Hicks, R. Waterfall, R. Ashworth. HRIS 55. IRRD 607007. ACTIVE

l. Department of Mechanical Engineering, Institute of Science and Technology: P. O. Box 88, Sackville Street, Manchester M60 IQD, England

(7) Thermodynamics and Gas Dynamics of Rotary Spark Ignition Engine. To develop a computer program simulating the thermodynamics and gas dynamics of a rotary spark engine with particular emphasis on gas concentrations in the combustion chamber. P. Baruah, D. Winterbone. HRIS 53. IRRD 606770. (Citations) ACTIVE

(8) Compact Exhaust Manifolds for Turbocharged Diesel Engines. To study compact manifolds fitted to supercharged diesel engines and incorporate results in the University's diesel engine simulation program. D. Winterbone, G. Alexander. HRIS 53. IRRD 606774. (Citations) ACTIVE

(9) Combustion in Quiescent Combustion Chamber Direct Injection Diesel Engines. To investigate fuel-air mixing and combustion in quiescent combustion chamber diesel engines, and to compute progress of combustion, and nitrous oxide and soot production. N. Whitehouse, E. Clough. HRIS 53. IRRD 606775. ACTIVE

25. UNIVERSITY OF NEWCASTLE-UPON-TYNE: Newcastle-Upon-Tyne, Tyne and Wear NE1 7RU, England

g. Department of Civil Engineering, Transport Operations Research Group: Same address

(38) The Optimization of Urban Bus Routes and Frequencies of Service. To develop a method to generate an optimum set of bus routes and frequencies to meet a given demand, within specified constraints and criteria. T. Chua. HRIS 12. IRRD 606718. ACTIVE

(39) Monitoring of Bulk Movements of Hazardous Goods by Road. To investigate developments in electronic and other vehicle detection methods which could be used to advance warn emergency service of a vehicle with hazardous materials. B. Gandham. HRIS 51. IRRD 606719. FUTURE

(40) The Incorporation of Urban Goods Movement Within the Planning Framework. To examine current transportation planning procedures of selected local authorities for urban goods movement; to case study a favored plan and devise an audio visual presentation. M. Hall, P. Worden. HRIS 12. IRRD 606720. ACTIVE

(41) Driver Behavior and Driving Safety. To select about a 40 km. test route and through direct observation to study relations between driving hazards and driving experience, accident history and present levels of driving skill. P. Hills, J. Shaoul, A. Risk. HRIS 52. IRRD 606771. ACTIVE

l. University of Newcastle-Upon-Tyne, Department of Civil Engineering, Division of Structural Engineering: NE 1 7 RU, Newcastle-Upon-Tyne

(1) Design of Port Pavements. To develop a structural design method for port pavements. J. Knapton, S. Barber. HRIS 24. IRRD 607140. (Citations) ACTIVE

26. UNIVERSITY OF NOTTINGHAM: University Park NG9 3FQ Nottingham, England

a. Department of Civil Engineering: Same address

(34) Comparison of Results of Frost Heave Tests Carried Out in a Cold Room and in a Self-Refrigerated Cabinet. A comparison of results of frost action on several sub-bases compacted to maximum density - optimum moisture in both a cold room and self-refrigerating unit. R. Jones, K. Lomas, P. Sherwood. HRIS 64. IRRD 606536. ACTIVE

(35) Ground Freezing as a Construction Expedient. To develop design methods and measurement of necessary creep and strength parameters of frozen ground in an improved testing facility. R. Jones, J. Harris. HRIS 33. IRRD 607141. ACTIVE

(36) Development of Recommendations for the Design of Welded Joints Between Steel Structural Hollow Sections. To test joints formed from unstiffened hollow sections by welding to working load and up to failure. G. Davies, M. Coutie. HRIS 25. IRRD 607142. FUTURE

(37) Heavy Goods Vehicle Monitoring in Urban Areas. To study vehicle classification on congested urban roads using detector signals. P. Davies, L. Ackroyd. HRIS 55. IRRD 607143. FUTURE

(38) Development of Photo-Logging Techniques for the Study and Assessment of Highways and Traffic Conditions. To extend the photo-logging system further to obtain information on highway geometry, pavement condition and traffic conditions. L. Ackroyd. HRIS 21. IRRD 607144. FUTURE

27. QUEEN'S UNIVERSITY OF BELFAST: David Keir Building, Stranmillis Road, BT 7 1NN, Belfast

a. Civil Engineering Department: Same address

(20) Evaluating the "Pull-Off" Test for the In-Situ Strength of Concrete. To correlate the load required to pull off a steel disc adhered to the surface of concrete using epoxy resin. A. Long, A. Murray. HRIS 32. IRRD 607043. (Citations) ACTIVE

(21) Punching Strength of Reinforced and Prestressed Concrete Flat Slabs. A theoretical and experimental investigation of the ultimate load behavior of flat slabs to produce improved design criteria. A. Long, Y. Franklin, G. Rankin. HRIS 25. IRRD 607136. (Citations) ACTIVE

30. THE CITY UNIVERSITY: Northampton Square, EC1V OBQ, London, England

a. Department of Civil Engineering: Same address

(27) Shear Deformation in Plates. To compare existing theories with newly developed theoretical aspects and examine applicability and accuracy of each of the approaches. PRS Speare. HRIS 25. IRRD 607340. (Citations) ACTIVE

(28) Construction Procedures, Conditions and Contracts, Estimating, Cost Planning and Control in Eastern European Countries. To seek a better understanding of the construction procedures of the European countries to find out if any of the methods would be improvements over those used in England. M. Pszenicki. HRIS 33. IRRD 607341. (Citations) ACTIVE

(29) Relation of Mineralogy to Grain Size in Soils. To relate mineralogy to grain size so that soil properties may be predicted. J. D. Coleman, L. Martyka, M. Afsharmehr. HRIS 63. IRRD 607342. (Citations) ACTIVE

c. Department of Aeronautical Engineering: Same address

(7) Wind Tunnel Tests of a Possible AGT Model. To study aerodynamic forces and moments acting on a model of an advanced gas turbine vehicle in a wind tunnel. J. Russell. D. Sykes, S. Watkins. HRIS 53. IRRD 606765. ACTIVE

32. UNIVERSITY OF SURREY: Guildford, Surrey, GU2 5XH England

a. Department of Civil Engineering: Same address

(23) NETCEM - An Alternative to Asbestos Cement. To consider a cement based product containing continuous opened networks of fibrillated polypropylene film as an alternative to asbestos cement. D. J. Hannawt, J. J. Zonsveld, D. C. Hughes, J. G. Keer, J. Galloway, B. K. Marsh. HRIS 32. IRRD 607165. ACTIVE

(24) Construction and Operational Energy Costs of Transport Systems. To provide more complete data on total energy usage in construction and operation of transport facilities. P. F. Gardiner, C. E. Wright, A. C. Brett. HRIS 17. IRRD 607166. (Citations) ACTIVE

(25) Pulverized Fuel Ash in Concrete. To identify how incorporation of pulverized fuel ash influences the strength of dry lean concrete mixes. R.I.T. Williams, D. C. Hughes, D. G. Montgomery. HRIS 32. IRRD 607167. ACTIVE

32. b. Mechanical Engineering: Same address

(3) Combustion of Lean Mixtures in High-Compression Spark-Ignition Engines. A study of the behavior of the combustion behavior of two engines in which the compression ratio can be varied and using a conventional fuel as well as a 0-100% alcohol mixture. A. Henham, R. Johns. HRIS 17. IRRD 606742. ACTIVE

33. BRADFORD UNIVERSITY: Richmond Road, Bradford BD7 1DP, West Yorkshire, England

a. Civil Engineering and Structural Engineering Department: Same address

(10) Hydraulic Flow Through Granular Media. To study porosity function of granular particles, wall-effect of permeameter, transitional roughness effect of particles and shape factor of particles. A. Waterhouse, A. H. Ayhan, R. J. Preston. HRIS 63. IRRD 607152. ACTIVE

(11) Pin-Ended Eccentrically Loaded Slender Concrete Columns. To continue and and extend research with the aim of verifying and/or extending existing failure theory and prediction and of developing new or refined design procedures. C. B. Wilby, V. R. Pancholi, D. H. Schofield. HRIS 25. IRRD 607153. ACTIVE

(12) Eccentrically Loaded Slender Reinforced Concrete Columns. To investigate the behavior of slender reinforced concrete columns subject to eccentric loading and develop a design procedure for such columns. C. B. Wilby, A. Dracos. HRIS 25. IRRD 607154. ACTIVE

(13) Highway Traffic Flow. To investigate traffic performance at rotary highway intersections. R. J. Salter, Al-Alawi. HRIS 55. IRRD 607155. ACTIVE

34. LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY: LE11 3TU, Loughborough, Leicestershire, England

b. Department of Transport Technology: Same address

(47) The Organization and Operation of Rural Public Transport in Denmark and the Netherlands. An investigation into the organization and operation of public transport (specifically bus services) in rural Denmark and the Netherlands because of their similarly in this respect to the U.K. R. Kilvington. HRIS 16. IRRD 606744. ACTIVE

d. Institute for Consumer Ergonomics: Same address

(12) A study of the Performance of Automatic Ticket Barriers. To study improved ticket barriers, the effect on flow rates and user acceptability will be assessed taking into account both public and maintenance staff. P. Stroud, J. Fulton, A. Naysmith. HRIS 52. IRRD 606549. (Citations) ACTIVE

36. CEMENT AND CONCRETE ASSOCIATIONS: 52 Grosvenor Gardens, London S.W.1., England

a. Research and Development Division: Wexham Springs, Stokes Poges Slough SL3 6PL, Berks, England

(89) Structures in Service. To monitor the behavior of actual structures in service (and during construction) and relate this behavior to that assumed in design. A. W. Beeby, L. J. Parrott, J. B. Read, S. W. Clements, R. G. Jewell, J. A. Forrester. HRIS 25. IRRD 607168. ACTIVE

36. a. (90) Strength of Concrete in Large Pours. To study the difference in strength between concrete within a large pour subjected to an adiabatic temperature rise and concrete cured at normal temperatures. T. A. Harrison. HRIS 32. IRRD 607169. ACTIVE

(91) Cement-Stabilized Materials. To study the economic viability of cement stablized materials and examine pavement design, durability and mixing techniques. A. A. Lilley, A. J. Clark. HRIS 24. IRRD 607170. ACTIVE

(92) Formwork Pressures. To develop an understanding of the mechanisms which determine maximum concrete pressure on formwork in wide sections. T. A. Harrison. HRIS 33. IRRD 607171. (Citations) ACTIVE

(93) Blended Cements. To establish acceptance criteria for pulverized fuel ash from British sources which are suitable for blending with portland cement. J. A. Dalziel, D. W. Hobbs. HRIS 32. IRRD 607172. ACTIVE

47. UNIVERSITY OF DURHAM: Old Shire Hall, Durham DH1 3HP, England

c. Department of Engineering Science, Science Laboratories: South Road, DH1 3LE, Durham, England

(2) Tension Stiffening in Reinforced Concrete Beams. An investigation of the effects of long-term loads and repeated loads on tension stiffening in reinforced concrete beams. R. Scott. HRIS 25. IRRD 606717. ACTIVE

(3) Plates on Elastic Foundations. A study of the deflection of loaded elastic plates in contact with a variety of elastic foundation models using both finite difference and finite element methods to determine actual contact area. J. Wilson. HRIS 25. IRRD 606737. ACTIVE

48. OXFORD UNIVERSITY: Parks Road, Oxford, OX1 3BD, England

h. Department of Clinical Pharmacology: The Radcliffe Infirmary, Woodstock Road, Oxford, England

(1) Pharmacological Study of Drivers. To study drivers involved in accidents in order to assess quantitatively the serious levels of drugs in the blood and develop a method for assessing level of psychological stress produced. C. Davies, D. Graham-Smith, P. Harms. HRIS 52. IRRD 606567. ACTIVE

50. MOTOR INDUSTRY RESEARCH ASSOCIATION: Watling Street, Nuneaton, CV10 OTU, Warwickshire, England

(109) Further Evaluation of the Lug-Down Test for HGV Noise. To check the correlations of the test procedures using a larger range of vehicles. D. Aspinall, R. Hedges, G. Robertson. HRIS 17. IRRD 606725. (Citations) COMPLETE

(110) Interior Noise of Commercial Vehicles. To evaluate proposed interior noise test procedure for goods and public service vehicles for comparisons with other test procedures. D. Aspinall, R. Hedges, G. Robertson. HRIS 17. IRRD 606726. (Citations) COMPLETE

(111) Evaluation of Noise Test Procedure for Motorcycles. To compare a close proximity noise test with 3 possible construction site limit tests for practical means of detecting motor cycles that subject community to excess noise. D. Aspinall, S. Daniel. HRIS 17. IRRD 606727. (Citations) COMPLETE

50. (112) Evaluation of the Lug-Down Test for HGV Noise Measurement. To develop noise test procedure based on the lug-down test and check correlation with outside standards. D. Aspinall, R. Hedges, G. Robertson. HRIS 17. IRRD 606728. (Citations) COMPLETE

(113) The Performance of Pressure Vessels from Three European Sources (UK, France and W. Germany). To study pressure and corrosion tests on pressure vessels prepared for use as brake reservoirs. D. Wright, J. Nixon. HRIS 34. IRRD 606729. (Citations) COMPLETE

(114) Jacked-Up Suspensions - Evaluations During Transient Manoeuvres. To find an objective method of determining if jacked-up suspensions are safe or not by means of transient manoeuvres. R. Oliver, P. Gibson, A. Holt. HRIS 53. IRRD 606730. (Citations) COMPLETE

(115) Drivers' Rearward Field of View in Commercial Vehicles. To study completely the aspect of rearward view from commercial vehicles where a computer aided mirror design technique will be verified by practical work. M. Fowkes. HRIS 53. IRRD 606731. ACTIVE

(116) Integrity Testing of Glass Reinforced Plastic Road Tanker. To determine the resistance to impact of a new glass reinforced plastic tanker compared to a conventional metal tanker. J. Davies. HRIS 53. IRRD 606732. ACTIVE

(117) Load Transfer During Braking. Measurement by static and dynamic testing of load transferred to front axle of a 16-ton vehicle during braking. R. Oliver, G. Wearing. HRIS 53. IRRD 606733. ACTIVE

(118) ECE Regulation 12 - Statistical Testing of Accident Data and Investigation of Test Procedure. To compare loading area on chest obtained by crashes with axial collapse and self aligning steering columns to find if ECE Regulation 12 favors axial collapse column. M. Kenefeck, T. Hutchinson. HRIS 53. IRRD 606734. (Citations) ACTIVE

(119) The Handling of Rigid Commercial Vehicles. To study handling characteristics of rigid commercial vehicles for use by industry as well as input into relevant UK standards and legislation. R. Oliver, P. Gibson. HRIS 53. IRRD 606735. ACTIVE

(120) The Repeatability and Comparability of Anthropometric Dummies. To establish confidence limits, in cooperation with other European users, for results obtained from tests based on legislative requirements. A. Hunt. HRIS 52. IRRD 606736. ACTIVE

69. UNIVERSITY OF LEEDS: Woodhouse Lane, Leeds LS2 9JT West Yorkshire, England

b. Department of Computer Studies: Same address

(9) Costs of Different Levels of Bus Service and Crew Constraints. To determine measures of costs of different types of service and more efficient use of crew, based on scheduling programs already developed. A. Wren, M. Parker. HRIS 15. IRRD 606783. ACTIVE

c. Department of Civil Engineering: Same address

(70) Use of Sintered Domestic Refuse as Aggregate in Concrete. To study treated residue from domestic refuse products for use as an artificial aggregate in concrete. P. J. Wainwright, S.P.K. Boni, I. Hadzinakus, P. Robery. HRIS 34. IRRD 607128. ACTIVE

69. c. (71) Composite for Pavements: Design and Characterisation of Sand-Tar Mixes. To derive fundamental material parameters and develop statistical models of response which will make the application of rational methods of road and airport pavement design possible. G. Singh, M. E. Dliwayo. HRIS 31. IRRD 607129. ACTIVE

(72) Design and Characterization of Soil-Salt Mixes for Low Cost Roads. To evaluate the effectiveness of common salt as a stabilizer under various environmental and loading conditions. G. Singh, M. A. Choudhry. HRIS 34. IRRD 607130. ACTIVE

(73) Efficiency of Vertical Drains. To study various methods of installation under simulative laboratory conditions to select the most efficient method for a site and for drain design. G. Singh. HRIS 63. IRRD 607131. ACTIVE

g. Department of Mechanical Engineering: Same address

(8) On-Line Processing of Transducer Signals in Fundamental Studies of Combustion in Recirculating Flow. To advance basic understanding of turbulent combustion through electrostatic probes and to improve mathomatical modelling. D. Bradley, S. Chin, A. Ahdalla, B. Ali. HRIS 53. IRRD 606773. ACTIVE

(9) Dynamics of Off-Road Vehicles. To investigate ride vibration and handling stability of off-road vehicles and to provide design data for steering, braking and suspension systems of proposed farm transport vehicle. D. Crolla. HRIS 53. IRRD 606862. (Citations) ACTIVE

j. Department of Psychology: Same address

(2) Psychoactive Drugs on Car Driving Ability. To investigate residual effects of commonly used psychoactive drugs on car handling ability and related psychomotor performance and mental processing skills. I. Hindmarch, A. Gudgeon, B. Hickey, R. Robinson, A. Hill. HRIS 52. IRRD 606849. (Citations) ACTIVE

70. DEPARTMENT OF THE ENVIRONMENT, NORTHERN IRELAND, ROADS SERVICES HG DIVISION: Stoney Road, Belfast, BT4 3TR, Northern Ireland

(22) Analytical Laboratory Model and Field Study of M-Beam Bridge Decks. A study to verify grid analysis giving maximum moments and shears by field tests with further studies on variable beam spacing and punching strength of slab deck planned. A. Long, J. Kirkpatrick. HRIS 25. IRRD 607137. (Citations) ACTIVE

74. PRESSED STEEL FISHER LTD., ENGINEERING DEPARTMENT, COWLEY, OXFORD, UNITED KINGDOM

(23) Computer Simulation of Adult and Child Trajectories Compared with Car to Dummy Impacts. Modification of the Calspan CVS Computer Program for the simulation of pedestrian impacts using the OPAT adult and child dummies. P. Finch, J. Fowler, D. Gebbels, G. Davies. HRIS 52. IRRD 606863. (Citations) COMPLETE

76. UNIVERSITY OF SHEFFIELD: Western Bank, Sheffield S10 2TN, South Yorkshire, England

a. Department of Civil and Structural Engineering: Mapping Street, Sheffield, S1 3JD, South Yorkshire, England

(60) The Behavior of Piles in Soft Rock. To determine forces required to drive pile into soft rock and the safe loads that can be carried on driven and drilled piles in such materials. F. Williams, A. Kadri. HRIS 62. IRRD 607156. ACTIVE

76. (61) Lateral-Torsional Buckling of Castellated Steel Beams. To investigate by theoretical study and full scale girder tests the lateral buckling behavior of castellated steel beams. D. Nethercot, D. Kerdal. HRIS 25. IRRD 607157. (Citations) ACTIVE

(62) Automatic Data Capture and Analysis Applied to Vehicle Headways and Other Traffic Flow Parameters. To develop a portable, automatic data collection and analysis system using a charge coupled device TV camera and a microprocessor-based data compression system for storing tape data. R. Ashworth, M. Hartley, P. Hicks, K. Dickinson, S. Ho, S. Velastin. HRIS 55. IRRD 607158. (Citations) ACTIVE

82. UNIVERSITY OF SOUTHAMPTON: Highfield, Southampton S09 5NH, Hampshire, England

a. Department of Civil Engineering: Same address

(20) Geometric Delays at Roundabouts. Relationships will be developed connecting the geometry of various traffic circles to vehicle delay. T. Williams, M. McDonald, N. Hounsell. HRIS 55. IRRD 607277. ACTIVE

d. Department of Mechanical Engineering: Same address

(3) Polynuclear Aromatic Hydrocarbon in Internal Combustion Engine Exhaust. A study of the deposition behavior of polycyclic aromatic hydrocarbons on carbon particles in the exhaust gases from IC engines. V. Duggal, G. Mills. HRIS 17. IRRD 606786. ACTIVE

e. Department of Aeronautics and Astronautics, Wolfson Unit for Marine Technology and Industrial Aerodynamics: Same address

(4) Development of Water Spray Emission Performance Standard. To develop and produce a Laser based system which will measure the obscurity created by the emission of water spray from wet road vehicles. J. Allan. HRIS 53. IRRD 606785. ACTIVE

88. UNIVERSITY OF STRATHCLYDE: Colville Building, 48 North Portland Street, G1 1XN, Glasgow

d. Department of Civil Engineering: Same address

(12) Vehicle Fuel Consumption in Urban Areas. To examine the effect of traffic environmental conditions on vehicle fuel consumption in urban areas. P. Green. HRIS 17. IRRD 607164. (Citations) ACTIVE

90. UNIVERSITY OF BRISTOL: Senate House, Bristol BS8, 1TH, England

a. Department of Civil Engineering: University Walk, BS8, 1TR, Bristol

(8) Aseismic Design of Dams and Other Structures. A continuing study to understand the way concrete and embankment dams respond to earthquake forces and is also applicable to other civil engineering structures. R. Severn, S. Ledbetter, C. Taylor, D. Altinisik. HRIS 63. IRRD 607046. (Citations) ACTIVE

(9) Stress Analysis of Bituminous Surfaced Steel Bridge Decks. To develop an analytical model for the behavior, under dynamic loading, of steel plates surfaced with bituminous material including experimental behavior and to develop design rules. M. Cullimore, J. Smith, J. Flett. HRIS 25. IRRD 607047. ACTIVE

92. UNIVERSITY OF LANCASTER: Bail Rigg, La1 4YR Lancaster, United Kingdom

b. Department of Engineering: Same address

(6) Initial Yielding of Laterally Loaded Circular and Elliptic Isotropic and Bimetallic Plates. Theoretically exact results are being computed for first yield loads and presented in dimensionless form for assessing serviceability in design. G. J. Turvey. HRIS 25. IRRD 607364. (Citations) ACTIVE

(7) Flexural Failure of Laminated Plates. Theoretically exact studies to establish the initial or first ply failure of plates have been done as design information in this type of structure. G. J. Turvey. HRIS 25. IRRD 607365. (Citations) ACTIVE

93. CRANFIELD INSTITUTE OF TECHNOLOGY, COLLEGE OF AERONAUTICS MK43 OAL, CRANFIELD, BEDFORDSHIRE, UNITED KINGDOM

(77) Methods of Reducing Aerodynamic Drag of Commercial Vehicles. To investigate a number of drag reducing mechanisms. A. Naysmith, K. Garry. HRIS 53. IRRD 606550. ACTIVE

(78) Study of the Contribution of the Social Services to Transport Research in France. Part of a tripartite review covering Britain, France and Germany. M. Benwell. HRIS 15. IRRD 606577. ACTIVE

(79) Articulated Vehicle Study. A study of the behavior of articulated vehicles particularly those with liquid loads. J. Ellis, A. Nalecz. HRIS 53. IRRD 606584. ACTIVE

(80) Tyre Characteristics on Uneven Surfaces. The development of a means for measuring the normal and lateral forces developed at the tire interface with the normal rough road surface. J. Ellis, H. Millard, B. Riley. HRIS 53. IRRD 606585. ACTIVE

95. UNIVERSITY OF GLASGOW: G12 8QQ, Glasgow, United Kingdom

g. Department of Aeronautics and Fluid Mechanics: Same address

(1) Aerodynamic Drag of Lorries. A systematic study of the aerodynamic drag on the tractor-trailer type of lorry. H. Wong. HRIS 53. IRRD 606700. (Citations) ACTIVE

(2) Investigation of Aerodynamic Characteristics of Kessock Road Bridge. The effectiveness of various flow control systems have been investigated by obtaining the static and dynamic characteristics of a section model of the bridge deck. T. Cain, R. Galbraith. HRIS 25. IRRD 606701. (Citations) COMPLETE

96. BRIGHTON POLYTECHNIC: Moulsecoomb, Brighton BN2 4GJ, East Sussex, England

a. Department of Civil Engineering: Same address

(4) The Engineering Properties of Epoxide Resin Concretes Produced by Impregnation Techniques. To optimise the fundamental engineering properties of epoxide resin concretes. BW Staynes, M. Dawes. HRIS 32. IRRD 607343. (Citations) FUTURE

(5) Soft Rock Engineering in the Anglo-Paris Basin with Special Reference to the Chalk of Southern England and Normandie - Picardie. A new stratigraphy is being introduced to provide a basis for detailed correlation of borehole core and geophysical data. FDC Henry, PVO Drummond, RN Mortimore, H. Anderson, J. Holliday. HRIS 61. IRRD 607344. (Citations) ACTIVE

96. a. (6) Behavior of Pile Groups Under Load. Investigation by monitoring load distribution in pile groups in service in various types of soils. W. K. Elson. HRIS 35. IRRD 607345. ACTIVE

101. UNIVERSITY OF WARWICK: CV4 7AL, Coventry, United Kingdom

a. Department of Engineering: Same address

(16) Optimum Control System Synthesis Techniques for Automobile Engines. To determine control functions for air, fuel, ignition timing, etc. which will minimize fuel consumption when operated under environmental constraints. M. Hughes, D. Shave, I. Kuriger. HRIS 53. IRRD 606586. ACTIVE

103. SOCIAL AND COMMUNITY PLANNING RESEARCH: 35 Northampton Square, EC1V OAX, London, United Kingdom

(23) Channel Crossing Car Survey. A survey to determine characteristics of the accompanied car traffic across the English Channel, and an attempt to explain the choice of the route used. B. Hedges, H. Finch, C. Dunn, J. Raftery. HRIS 12. IRRD 606782. ACTIVE

104. KINGSTON POLYTECHNIC: Conbury Park Road, KT2 6LA, Kingston on Thames, Surrey

a. School of Civil Engineering: Same address

(3) Inelastic Behavior of Structural Hollow Section (Hot Rolled) Taking into Account Imperfections and Residual Stresses for the Overall and Local Buckling. To analyze column behavior of hot rolled steel hollow sections considering imperfections and residual stresses for comparison with current British and European codes. A. Stamenkovic, M. Gardner. HRIS 25. IRRD 607262. ACTIVE

(4) Non-Linear Analysis of Stiffened Plates and Shells Using LUSAS Finite Element Program. To analyze inelastic behavior of joints in welded steel circular and rectangular hollow sections as used in buildings and offshore structures and ships. A. Stamenkovic, D. Irving. HRIS 25. IRRD 607263. ACTIVE

106. PORTSMOUTH POLYTECHNIC: King Henry I Street, Portsmouth PO1 2DY, Hampshire, England

b. Department of Civil Engineering: Burnaby, Portsmouth PO1 3QL, England

(10) Numerical Analysis of Orthotropic Plates. The investigation is directed to determining the suitability of using finite differences in lieu of finite element analysis in some plates having isotropic and orthotropic properties. B. Jay, M. Devane. HRIS 25. IRRD 607272. INACTIVE

(11) Behavior of Reinforced Earth Retaining Walls Using Plastic Tendons for Soil Reinforcement. A complete study of reinforced earth retaining walls using plastic tendons, including full scale construction tested to failure. P. Johnson, R. Ritson, D. Petley, N. John. HRIS 25, IRRD 607273. ACTIVE

110. PEAT, MARWICK, MITCHELL & CO.,PLANNING AND TRANSPORTATION DIVISION 5TH FLOOR, 1 PUDDLE DOCK: BLACKFRIARS EC4V 3PD, LONDON, UNITED KINGDOM

(7) Assessment of Needs for Rural Public Transport. To draw up a comprehensive definition of the "need" for public transport provision in the rural areas. D. Robertson, C. McIndoe. HRIS 12. IRRD 606702. COMPLETE

117. THE POLYTECHNIC OF WALES: Llantwit Road Treforest, Pontypridd, CF37 1DL, Mid Glamorgan, Wales

(15) The Engineering Properties of Glacial Tills in the Taff Valley. By means of aerial photography and field reconnaissance to study Taff Valley tills for their engineering properties and how they vary with the lithological heterogeneity of the deposits. G. Rowlands, B. Isaac, J. Lewis. HRIS 61. IRRD 607274.
ACTIVE

(16) Fabric and Strength of Clays Stabilized with Lime. A study of the modifications of engineering properties of clays by the addition of lime, with use of electron microscope for close examination of structure. E. Bhogal, R. Delpak, S. Wild, M. Arabi. JRIS 62. IRRD 607275.
ACTIVE

119. HERIOT WATT UNIVERSITY: Department of Civil Engineering, Riccarton Currie, EH14 4AS, Edinburgh

(2) Effects of Low Temperatures on Abnormal Concrete Mixes. An assessment will be made of the strengths of abnormal concrete mixes using small test specimens. P. Jackson, D. Haldane. HRIS 32. IRRD 607126.
ACTIVE

(3) Bond Performance of Ribbed Reinforcing Bars. To study how to optimize the size and shape of bar deformations in order to achieve best bond performance. J. Cairns. HRIS 25. IRRD 607127.
FUTURE

123. OXFORD POLYTECHNIC: Headington, Oxfordshire, OX3 0BP, England

b. Department of Architecture and Construction: Same address

(10) Strength of Concrete Pipes. To determine the strength of a sample of commercially available concrete pipes with a view to establishing performance standards. Walker, Mangalgiri. HRIS 34. IRRD 607268.
ACTIVE

(11) Load Capacity of Sheet Piling Used in Pipe Jacking Operations. To determine an accurate method of design of sheet piling in pipe-jacking systems. Washbourne. HRIS 34. IRRD 607269.
ACTIVE

127. TRENT POLYTECHNIC: Burton Street, Nottingham, NG1 4BU, England

(5) Planning for Minority Modes of Transport - Social Transport Provision Around a Provincial City. An O-D type study is being made of users of specially provided transportation to find accessibility problems, and an evaluation of local public transport. J. Sutton. HRIS 16. IRRD 607276.
ACTIVE

137. UNIVERSITY OF DUNDEE: Dundee DD1 4HN, Dundee, Angus, United Kingdom

a. Department of Civil Engineering: Same address

(5) Fatigue of Epoxy Resin Adhesive Joints at Different Temperatures. A study of the fatigue behavior of epoxy joints tested up to 50 million cycles of loading. D. Smith, G. Mays, G. Tilly. HRiS 34. IRRD 606546.
ACTIVE

(6) Effect of Constituent Materials, Environment and Age on the Mechanical Properties of Concrete. To study the behavior of concrete made with a very wide range of aggregates. RK Dhir, JD Duncan, RY Gillespie, MC Hall, TH Koh. HRIS 32. IRRD 607278. (Citations)
ACTIVE

137. a. (7) Roadway Decks for Steel Bridges - New and Improved Types. Durability of Epoxy Resin Adhesive Joints. To develop a roadway deck for steel bridges lighter in weight than reinforced concrete, and less costly than welded steel. DW Smith, GC Mays, GKC Ong, CK Wong, A. Awandarajah, RJ Lark. HRIS 25. IRRD 607279. (Citations) ACTIVE

(8) Stability of Tied-Arches. To study the stability and/or in-plane buckling behavior of tied or bow-string arch bridges. DW Smith, KM Peebles. HRIS 25. IRRD 607330. ACTIVE

(9) Concrete Containing Superplasticising Admixtures. A study of the use of fly ash to enhance the flowing and water-reducing characteristics of a plasticising admixture. RK Dhir, PN Staples, WF Yap, KW Tham. HRIS 32. IRRD 607331. ACTIVE

(10) Behavior of Concrete Incorporating Fly Ash as Partial Replacement of Cement. An attempt to establish a more definite understanding of fly ash concrete behavior. RK Dhir, JGL Munday, LT Ong, A. Apte. HRIS 32. IRRD 607332. (Citations) ACTIVE

(11) Determination of the Reinforcing Effect of Fabrics in Roads. The development of suitable analytical methods and the initiation of a preliminary investigation of conventional pavements which include fabric layers that are in progress. AF Stock, J. Yu. HRIS 24. IRRD 607333. ACTIVE

(12) Recycling Bituminous Materials. A study to provide information as to whether reclaimed bituminous material may be used for road construction and maintenance works with confidence or not. AF Stock, A. Kirkpatrick, NY Ho. HRIS 31. IRRD 607334. ACTIVE

138. LONDON TRANSPORT EXECUTIVE, PLANNING RESEARCH OFFICE: Albany House, 55 Broadway, SW1H 0BD, London, United Kingsom

(31) Bus Running Study. To understand the effect of irregular running on route performance and to emphasize the worth of preventive action. L. Shields, E. Thompson, R. Kaufman. HRIS 54. IRRD 606738. ACTIVE

(32) Petrol Prices, Traffic Levels and Bus Lost Mileage. Time series study of links between the cost of fuel and observed traffic levels in London. G. Rende, T. Mack. HRIS 12. IRRD 606739 ACTIVE

(33) London Transport Bus Passengers: Walking and Waiting Times. Surveys to establish what determines waiting times for buses. G. Rendle, C. Cummings. HRIS 52. IRRD 606740. (Citations) COMPLETE

139. UNIVERSITY OF WALES: University College, Department of Civil Engineering and Structures, 2 Newport Road, CF2, 1TA, Cardiff

(19) Residual Stresses and Distortion of Steel plated Structures. A study to predict ultimate strengths of axially loaded steel plated structures due to induced stresses of fabrication. R. Narayanan. HRIS 25, IRRD 607048. (Citations) ACTIVE

(20) Bending and Torsion in Steel Fiber Reinforced Concrete Beams. To assess the suitability of fiber reinforced concrete beams where there is predominant torsion (i.e. Bowgirders, spiral staircases, etc.). R. Narayanan, Z. Toorani - Goloosalar, K. Green, A. Farkhad. HRIS 25. IRRD 607124. (Citations) ACTIVE

(21) Stability and Strength of Axially Loaded Stiffened Plates. The objective is to estimate the strength and stability of stiffened plates for various geometries. R. Narayanan, N. Shanmugan, F. Chow. HRIS 25. IRRD 607125. (Citations) ACTIVE

140. UNIVERSITY OF ASTON IN BIRMINGHAM: Gosta Green, Birmingham B4 7ET, England

a. Department of Civil Engineering: Same address

(34) Mapping, Monitoring and Predicting Soil Erosion in Jamaica. An Air Photo Based Study. An assessment of the value of aerial photographs for mapping, monitoring and predicting soil erosion in Jamaica. W. Collins, P. Collier. HRIS 61. IRRD 607145. (Citations) ACTIVE

(35) A Methodology for Mapping, with the Aid of Aerial Photographs, Urban Land Use in the Tropics. To develop a methodology, using aerial photographs, for mapping urban land use in the tropics, in this case, Nigeria. W. Collins, E. Esin. HRIS 13. IRRD 607146. ACTIVE

(36) Air Photo Interpretation for the Measurement of Changes in Urban Land Use. A study made of land use changes in urban areas over a 27 year period by use of aerial photographs upon field checking produced satisfactory data. W. Collins, C. Emmott. HRIS 13. IRRD 607147. COMPLETE

(37) A Survey of Open Space, Using Color Infra-Red Aerial Photographs. Because the British Government in the matter of new towns has opted to redevelop existing cities, aerial photography using infra red has successfully surveyed open city areas. W. Collins, S. Sekliziotis. HRIS 13. IRRD 607148. COMPLETE

(38) Satellite Imagery (Landsat) for Reconnaissance Scale Natural Resource Mapping in Western Sudan. Landsat photographs of a portion of western Sudan were compared for accuracy of resources reconnaissance with conventional aerial photogrammetry, and found to be practical. W. Collins, D. Parry. HRIS 61. IRRD 607149. COMPLETE

(39) Recording and Analysis of Road Traffic Accidents in Iran. To develop a system for collecting and analyzing road traffic accident information suitable for use in Iran. N. Foot, W. Collins, A. Jabbari. HRIS 51. IRRD 607150. ACTIVE

(40) Study of Stabilized Minestone. A study of the stabilization of unburnt coal mine shale with both lime and cement with particular emphasis on immersion testing. R. Kettle, A. McNulty. HRIS 35. IRRD 607151. ACTIVE

b. Interdisciplinary Higher Degrees Office: Same address

(5) Farming Considerations in Highway Assessment. Development of methods for incorporating farming considerations in decision making on road schemes. D. Van Rest, A. Maude. HRIS 12. IRRD 606716. (Citations) ACTIVE

141. POLYTECHNIC OF CENTRAL LONDON, TRANSPORT STUDIES GROUP:
35 Marylebone Road, NW1 5LS, London, United Kingdom

(17) The Efficiency of Major British Urban Bus Operators. An extensive series of studies of productivity measures in major British bus operations. P. White, P. Higginson. HRIS 11. IRRD 606772. (Citations) ACTIVE

(18) Further Studies into the Use and Pricing of Travelcards. An extensive study of the development of travelcards in Britain and elsewhere in Europe. P. White. HRIS 15. IRRD 606864. (Citations) ACTIVE

141. b. Engineering Structures Group: Same address

(2) Shear Reinforcement at Column Heads in Reinforced Concrete Flat Slabs. To examine the performance of single-leg stirrups used as shear reinforcement in flat slabs. P. E. Regan. HRIS 25. IRRD 607258. ACTIVE

(3) Serviceability Behaviour of Reinforced Concrete Subjected to Tension. To find methods of calculating post-cracking stiffnesses and widths of cracks in reinforced concrete subjected to tension. P. E. Regan. S. Haqqi. HRIS 25. IRRD 607259. ACTIVE

(4) Longitudinal Shear in the Flanges of Reinforced Concrete Beams. To develop methods of design/analysis for the transfer of longitudinal shear between the webs and flanges of reinforced or prestressed concrete beams. P. E. Regan, L. Domingues. HRIS 25. IRRD 607260. ACTIVE

(5) Compressive Membrane Action in Reinforced Concrete Slabs. To build a practical design method allowing account to be taken of compressive membrane effects as they influence both flexural and punching resistance. P. E. Regan, B. Chattopadhyay. HRIS 25. IRRD 607261. ACTIVE

145. R. TRAVERS MORGAN AND PARTNERS: 136 Long Acre, WC2E 9AE, London, United Kingdom

(19) Early Public Consultation for Major Road Projects. To give the public, prior to the process of route development, an opportunity to express ideas and opinions about the need for and the locations for major new roads. P. Mynors, A. Arber, M. Moore, W. McDougall. HRIS 12. IRRD 606741. (Citations) ACTIVE

146. TRANSPORTATION PLANNING ASSOCIATES: 14 High Street, BS12, Thornbury, Bristol, United Kingdom

(12) Monklands Area Transport. A comprehensive revision of public transport services for the Monklands District of Strathclyde. A. Ochojna, R. Lewis, D. Whiting. HRIS 12. IRRD 606855. ACTIVE

(13) Coachmap: A Market Analysis Project (Map) for National Express Services. The collection and analysis of market research data to enable the monitoring and updating of the new coach system. I. MacBriar, A. Douglas, R. Lewis. HRIS 12. IRRD 606856. ACTIVE

(14) Traffic Study 2. Collection of data for carrying out preliminary analysis. R. Lewis, P. Willoughby, D. Whiting. HRIS 12. IRRD 606857. ACTIVE

(15) Traffic Survey. To obtain data by means of extensive observations at selected sites in order to throw light on route choice behavior. R. Lewis, P. Willoughby. HRIS 12. IRRD 606858. ACTIVE

(16) Travel Patterns Between North and South Wales by Road, Rail and Bus. Collection of data on travel patterns between North and South Wales, plus monitoring by means of on bus interviews. R. Lewis, M. Green. HRIS 12. IRRD 606859. ACTIVE

(17) Data Bank for Testing Comprehensive Traffic Management Models. Data now available for testing other traffic management models. T. Mulroy, R. Cathcart, E. Fearon. HRIS 12. IRRD 606860. (Citations) COMPLETE

(18) Oxford-Birmingham Traffic Route Study. A two stage strategic/corridor model is to be developed based directly on RHTM matrices. T. Mulroy, W. Wyley, P. Webster. HRIS 12. IRRD 606860. ACTIVE

158. WOOTTON JEFFREYS AND PARTNERS: Cemetary Pales, GU24 OBL, Brookwood, Woking. Surrey, England

(20) The Development of a Computer Based System of Personalized Public Transport Timetables. To develop timetables which will provide residents with the best possible public transport from home to all other areas and including routes, transfer points, times and costs. H. Wootton, R. Williamson, A. Miller. HRIS 52. IRRD 606787. ACTIVE

(21) 'Vista' - Traffic Data Collection System. A micro-computer based traffic data collection system which is very accurate and can be used to collect pedestrian and vehicle O-D data, traffic flow characteristics, and to check manual and automatic traffic counting methods. R. Potter. HRIS 12. IRRD 606788. ACTIVE

(22) Effectiveness of Existing Signposts - Stage 3. An extension of work carried out in Stage 2 to explore alternative signing considering physical restrictions, local policies and costs. R. Burton, M. Hall. HRIS 54. IRRD 606789. (Citations) ACTIVE

(23) The Use of Aerial Photography for Traffic Data Collection. To develop an aerial time-lapse photographic technique for the collection of traffic data which is low cost, easy to mount and straightforward to analyze. P. Whiston. HRIS 21. IRRD 606790. ACTIVE

160. BRITISH STANDARDS INSTITUTION: Test House, Maylands Avenue, Hemel, Hempstead, HP2 4SQ, Hertfordshire, England

(9) Testing of Traffic Signals. To test various characteristics of traffic signals including color emission, voltage limitations and optical performance. B. Collier, M. Huber. HRIS 54. IRRD 606747. ACTIVE

(10) Recalibration of Tachograph Test Equipment. An investigation into methods for the periodic recalibration of tachograph test equipment. J. Bingham, L. Yates. HRIS 53. IRRD 606748. ACTIVE

161. JAMIESON MACKAY AND PARTNERS: 3 Mandeville Place, Wigmore Street, W1M 5LB, London, England

(31) Commercial Vehicle Trip Analysis. A re-examination of the past trend of changes in trip lengths of commercial vehicles to determine changes in the pattern of trip lengths since 1970. J. Latchford, C. Eastman. HRIS 15. IRRD 606847. ACTIVE

(32) Value of a Facility Study. To establish a method for calculating the change of amenity value of facilities such as shops, parks and golf courses which are to be impacted by proposed highways. J. Latchford, D. Pickering, C. Eastman. HRIS 12. IRRD 606848. ACTIVE

(33) Kirkhamgate to Dishforth Scheme - Traffic and Economic Study. To provide traffic and economic data for the selection of a route for a regional highway. J.C.R. Latchford, R. G. Jacoby, J. F. Harbridge. HRIS 12. IRRD 606879. ACTIVE

167. METRA CONSULTING, LTD.: St. Mary's House, 42 Vicarage Crescent, SW11, 3LD, London, United Kingdom

(8) Costs and Cost Effectiveness of the Means of Abating Road Traffic Noise, Aircraft Noise, and Industrial Noise. To review, summarize and, to a limited degree, draw policy conclusions from data from OECD countries concerning the costs and cost effectiveness of various means for abating road traffic, aircraft and industrial noise. S. Plowden, J. Crayston. HRIS 17. IRRD 606762. (Citations) COMPLETE

(9) Standard Costing System Study. To develop a set of simple cost estimating models for large construction projects. D. Williamson, W. Alexander, R. Charlton. HRIS 15. IRRD 607366. ACTIVE

168. NATIONAL BUS COMPANY: Deanery Mews, Minister Precincts, Peterborough, PE1 1XX, England

(7) Value of Information Publicity. To evaluate the effect of high quality publicity distribution on bus patronage and awareness. P. Browning, S. Linn. HRIS 52. IRRD 606589. (Citations) ACTIVE

(8) Woodspring Reduced Fares Experiment. To examine the effects of the Woodspring District reduced fares scheme launched in January 1979. A. Kilner, A. Fox. HRIS 15. IRRD 606590. ACTIVE

(9) Bus Timetable Evaluation. To test comprehension of existing types of bus timetables and evaluate different kinds of format. S. Linn, B. Fox. HRIS 52. IRRD 606591. (Citations) ACTIVE

176. MERSEYSIDE PASSENGER TRANSPORT EXECUTIVE: 24 Hatton Garden, Liverpool L3 2AN, England

(4) Reduced Fares Experiment. To measure the effect of reduced fares on bus patronage and income by means of an extended experiment in the St. Helens area. White. HRIS 15. IRRD 606722. ACTIVE

(5) Zone Ticket Monitoring. To assess the impact of the zone ticket system, introduced in October 1978, on public transport journey patterns in Merseyside. White. HRIS 15. IRRD 606723. ACTIVE

(6) Passenger Information. To examine the effectiveness of conveying public transport information to the traveller and to suggest improvements. White. HRIS 52. IRRD 606724. ACTIVE

177. NORTHEAST LONDON POLYTECHNIC: Longbridge Road, Dagenham, Essex, England

a. Department of Civil Engineering, Faculty of Environmental Studies: Forest Road, E17 4UB, London

(3) A Plastic Theory for Ultimate Strength and Deformation of Reinforced Concrete Members. To develop a plastic theory suitable for the limit analysis of a reinforced concrete section. A. O. Ogundehin. HRIS 25. IRRD 607265. ACTIVE

(4) Ultimate Strength and Ductility of Reinforced Concrete Beams Subjected to High Shear Forces. To determine the degree of binding required for full redistribution of moments in continuous reinforced concrete beams. F. A. Noor, M. Khalid, W. M. Jenkins. HRIS 25. IRRD 607266. (Citations) ACTIVE

(5) Roughness in Joints and Its Relation to Friction in Rocks. To establish a relationship between roughness in rocks and the angle of friction for the surface. D. C. Wijeyesekera. HRIS 24. IRRD 607267. ACTIVE

179. MAS SURVEY RESEARCH, LTD.: 25 Wellington Street, WC2 7DW, London

(2) Noise Insulation Survey. To determine the success of house noise insulation against major road construction noise. J. Bowen, L. Sagel. HRIS 17. IRRD 606721. ACTIVE

180. LONDON BOROUGH OF LEWISHAM: Deptford Town Hall, London SE14 6AE, England

(6) Atmospheric Lead and Other Heavy Metals in the Borough of Lewisham. To assess the levels of atmospheric lead in all parts of the borough of Lewisham with particular reference to the exposure of school children near busy through-routes. J.D.Rolfs. H[illegible]7. IRRD 607040. FUTURE

180. (7) Traffic and Environmental Management Studies. To improve traffic and environmental conditions in predominantly residential areas. J. Gent, M. Blackstone. HRIS 17. IRRD 607041. ACTIVE

(8) Controlled Parking Zones. To develop proposals for the control of on-street parking in town centers. J. Couch, D. W. Hunt. HRIS 54. IRRD 607042. FUTURE

194. CLEVELAND COUNTY COUNCIL: P.O. Box 77, Gurney House, Gurney Street, Middlesbrough, TS1 1JL, Cleveland, England

(8) Day Care Requirements of the Elderly in Rural Areas. A study of transport sources needed to take elderly people in rural areas to day care services. M. Wagner, J. Bancroft. HRIS 16. IRRD 607035. ACTIVE

(9) Cleveland Freight Study. A county-wide study of industrial traffic generation. A. Mann. HRIS 16. IRRD 607036. ACTIVE

(10) Cycleways. To monitor Marton Beck Cycleway carried out by the County Council, Middlesbrough Borough Council and the Department of Transport. A. Wann, E. Crookston. HRIS 21. IRRD 607037. ACTIVE

(11) Special Schools Transport - Cost Reduction Study. To investigate the transport provided for physically and mentally handicapped children. B. G. Birdseye, C. Hart. HRIS 16. IRRD 607038. ACTIVE

(12) Special Schools Transport - Allocation of Contracts. To develop a procedure to determine an allocation of contracts at minimum overall cost. B. G. Birdseye. HRIS 16. IRRD 607039. ACTIVE

195. SOUTH YORKSHIRE PASSENGER TRANSPORT EXECUTIVE: Exchange Street, S2 5SZ, Sheffield

(11) The Future of Public Transport in Sheffield. The first stage of a comprehensive feasibility study of all phases of possible lines for development suggested by the Sheffield/Rotherham land use transportation study. R. Faulks. HRIS 12. IRRD 606769. ACTIVE

198. ROLLS-ROYCE MOTORS, LTD.: Pym's Lane, Crewe CW1 3PL, Cheshire

b. Aero Division: P.O. Box 31, Moor Lane, DE2 8BJ, Derby

(1) The Generation, Radiation and Control of Aero Engine Noise. To develop means of reducing and predicting the noise of installed aero engines, with emphasis on making further noise reductions without increasing engine weight or cost and without reducing fuel efficiency. B. Barry, B. Tester, W. Smith. HRIS 17. IRRD 606850. ACTIVE

(2) Low Emissions (Transply) Spey Combustor. To produce a combustor configuration for the commercial Spey that enables the exhaust emission levels to comply with proposed EPA/ICAC regulatory levels. J. Bhangu, R. Bowler, B. Eardley, J. MacLaughlin. HRIS 17. IRRD 606851. (Citations) ACTIVE

(3) Evolution and Demonstration of a Combustion Chamber Producing Low Nitric Oxide and Low Idle Pollution by Use of Fuel Staging, for Application in the RB211. To further research and test fuel preparation and primary zone concepts suitable for incorporation into a double annular fuel staged combustor capable of meeting EPA proposed emissions controls for 1984. M. Boreham, J. Mangham, B. Jones, S. Hartropp, W. Seaman, M. Pearce. HRIS 17. IRRD 606852. (Citations) ACTIVE

198. b. (4) Measurement of the Variability of RB211 Emissions. To measure RB211 engine exhaust emissions to establish pollution level between ground idle and maximum thrust. J. Bhangu, P. Walker, C. Priddin, M. Wedlock. HRIS 17. IRRD 606853. ACTIVE

(5) Definition of a Low Idle Pollutant (CO and UHC) Combustor for RB211. To define a primary zone concept that would produce extremely low HC and CO even at adverse idling conditions of low pressure ratio RB211 derivatives, as well as low smoke at high power. M. Boreham, B. Smart, B. Jones, C. Wilson, A. Wynne, H. Moxon. HRIS 17. IRRD 606854. ACTIVE

204. BRITISH HYDROMECHANICS RESEARCH ASSOCIATION: Cranfield, Bedforshire, MC43 8AJ, England

(7) Abrasive Wear Research - Hydraulic Pipelines (2). A continuation of projects IRRD 605039 and 606014 to compare about 18 materials for resistance to abrasive wear. B. Jacobs, J. James. HRIS 22. IRRD 606547. FUTURE

205. TRANSPORT AND ENVIRONMENT STUDIES: 103-107 Waterloo Road, SE1 8UL, London

(4) Bus Access to Pedestrian Areas. A world wide literature review and a United Kingdom survey of the present situation pertaining to buses sharing streets with pedestrians and bus access to purely pedestrian streets. J. Roberts, T. Ryszkowski. HRIS 51. IRRD 606763. (Citations) ACTIVE

(5) Pedestrian Areas in Britain. To provide a range of data on pedestrian areas on all known schemes in Britain including type, date of introduction and indicators of level of success. J. Roberts. HRIS 12. IRRD 606764. (Citations) ACTIVE

207. LIVERPOOL POLYTECHNIC: 53 Victoria Street, Liverpool L1 6EY, Merseyside, England

(3) Concentrated Loads on Reinforced Concrete Slabs. To consider current design methods for dealing with concentrated loads on slabs and by experimental verification to produce a more precise design methodology. R. M. Romaya, C. Sakalas. HRIS 25. IRRD 607264. ACTIVE

218. GREATER GLASGOW PASSENGER TRANSPORT EXECUTIVE: 48 Vincent Street, G2 5TR, Glasgow, Scotland

(20) Transcard Survey. To allocate revenues on transcards allowing unlimited travel and obtain additional socio-economic information for marketing strategy. C. Sutton, D. Ferguson, A. Wilson, J. Watt. HRIS 15. IRRD 606768. ACTIVE

219. QUINTON HAZELL, LTD.: Conway Road, LL28, 5BS, Colwyn Bay, Clwyd

(6) Development of Energy-Absorbing Devices for Motor Car Front and Rear Bumpers. To further investigate fluid behavior to meet specific application in the development of equipment for motor car energy absorbing bumpers. G. Persicke, J. Child. HRIS 53. IRRD 606755. ACTIVE

227. PLYMOUTH POLYTECHNIC, DEPARTMENT OF CIVIL ENGINEERING: Palace Court, Palace Street, PL1 2DE, Plymouth

(5) The Influence of Edge Markings on Highway Maintenance Costs. To determine what effect, if any, edge marking has on edge maintenance requirements. C. K. Kennedy, G. D. Newson. HRIS 34. IRRD 607270. ACTIVE

(6) Geotechnical Performance of Weak Rock. To assess sampling and testing techniques available to determine the geotechnical parameters relevant to the design of civil engineering works in material transitional between "engineering soil" and "engineering rock." S. Johnston, C. K. Kennedy. HRIS 61. IRRD 607271. ACTIVE

255. INTERNATIONAL CARGO HANDLING COORDINATION ASSOCIATION: Abford House, 15 Wilton Road, SW1V 1LX, London, England

(8) Container Top Safety. A report on container top safety based on a survey of container manufacturers and operators, and paint manufacturers. R. Swatton. HRIS 53. IRRD 606587. (Citations) COMPLETE

273. BASILDON DEVELOPMENT CORPORATION: Gifford House, Basildon, S13 2EX, Essex, England

(5) Time Series Analysis of Continuous Traffic Counter Data. To analyze by time-series techniques the long term traffic behavior and to identify and quantify any trends together with any seasonal and cyclical fluctuations. J. Mackenzie. HRIS 55. IRRD 607031. ACTIVE

(6) Public Transport Route. Timetable and Fare Structure Evaluation. To develop a computer package to facilitate the rapid evaluation of alternative public transport routes and production of either sample or full timetables. A. M. Budd, C. Brown. HRIS 12. IRRD 607032. ACTIVE

(7) Public Transport Awareness in Basildon. To conduct an extensive publicity campaign following significantly revised bus services within Basildon. A. M. Budd, C. Brown, J. Mackenzie. HRIS 13. IRRD 607033. (Citations) COMPLETE

(8) Cycle Traffic in Basildon. To formulate proposals to extend and enhance the present discontinuous and incomplete cycleway system in Basildon. A. Leech, A.F.R. Collins. HRIS 12. IRRD 607034. (Citations) ACTIVE

276. WEST YORKSHIRE PASSENGER TRANSPORT EXECUTIVE: Metro House, West Parade Wakefield, WF1 1NS, West Yorkshire, England

(4) The Effects of a Multi-Ride Ticket System. To determine the effects of a multi-ride ticket system sold through agents in terms of passenger acceptance, boarding speed and reliability. P. Bowen. HRIS 15. IRRD 606766. ACTIVE

327. TEESIDE POLYTECHNIC: TS1 3BA, Middlesbrough, Cleveland

b. Department of Civil Engineering: Same address

(1) Geotechnical Properties of the Laminated/Varved Clays of the Middlesbrough Area. To determine the effect of laminations/varves on the geotechnical properties of the clays in the Middlesbrough area. P. D. Williams, F. G. Bell, R. K. Taylor. HRIS 62. IRRD 607173. ACTIVE

334. WEST YORKSHIRE METROPOLITAN COUNTY COUNCIL, DIRECTORATE OF PLANNING, ENGINEERING AND TRANSPORTATION: Bishopgarth, Westfield Road, Wakefield, West Yorkshire, WF1 3RA, England

(4) Animated Traffic Model. To develop a simulation model to assist in the design of traffic management and road improvement which provides for animated visual output demonstrating actual movement of traffic. A. Smare, R. West, C. Edwards. HRIS 55. IRRD 606743. (Citations) ACTIVE

(6) Reinforced Earth. To develop techniques for the expanded use of reinforced earth structures. C. Jones, D. Cliff, S. Broadbent. HRIS 25. IRRD 607134. (Citations) ACTIVE

347. F. C. BENNETT & SONS, LTD.: Milton Common Way, Thame, Oxfordshire

(1) Quiet Heavy Vehicle - Operational Trials. To test the durability and reliability in normal fleet use of noise reduction measures applied to the quiet heavy vehicle and monitor vehicle operating costs. M. Underwood, D. Bennett, J. Collins. HRIS 53. IRRD 606552. ACTIVE

UNITED STATES

Resurvey - 1980

Arthur B. Mobley

The Information for the United States was furnished by Mr. Arthur B. Mobley, Manager of the Highway Research Information Service, Transportation Research Board. The report lists 3194 projects, including new projects as well as those previously reported but which had not been shown to be complete, superseded or abandoned in an earlier report. A total of 574 projects is shown to be complete. The report is divided into two parts, the first listing those projects undertaken by the Federal Highway Administration, either in-house or by contract, projects under the National Cooperative Highway Research Program, and in-house projects under other Federal agencies. The second section includes projects under State and local governments or agencies thereof, educational institutions, private contract and commercial concerns.

1. FEDERAL HIGHWAY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION: Washington, D.C. 20590

a. Staff Studies.

(1) Consolidated R&D Information System Feasibility Study. To consolidate the information systems now in existance. Runt. HRIS 11-153605 ACTIVE

(2) Analytical and Simulation Studies of Roadside Barriers, Energy Absorbing Barriers and Guardrail-Bridge Rail Transitions. Studies of barrier simulation, vehicle dynamic simulations and vehicle occupant response simulations. Oskard. HRIS 21-082074 ACTIVE

(3) Evaluation of the Extent and Significance of the Parameters Controlling Scour. An investigation of parameters and processes controlling scour, its magnitude and extent. Gilje. HRIS 22-153613 ACTIVE

(4) Value to the Public of Screening Roadside Junkyards. To determine characteristics of these junkyards most annoying to the public, quantify the annoyance and suggest treatments to control and minimize the problem. Wachtel. HRIS 23-192619 ACTIVE

(5) Determination of Properties of Granular Pavement Components under States of Stress Simulating Service Conditions. To develop characterizing equations for predicting the in-service behavior of soil-aggregate materials. Sherwood. HRIS 24-082062 ACTIVE

(6) Measurements of Seasonal and Short Term Changes in Skid Resistance. A study of the independent variables affecting skid resistance to develop a method of adjusting measurements taken at any specific time to a standard condition or common base. Klinedinst. HRIS 24-193153 ACTIVE

(7) Pavement Evaluation and Overlay Design. To develop a method of measuring stiffness properties of the pavement system, using a deflection measuring device, for use in an elastic layered computer program for overlay design. May. HRIS 24-192614 ACTIVE

(8) Status of Statewide Skid-Resistance Inventories, Implementation and Benefits. To determine the adequacy of data from other sources, its uses and benefits gained from the data. Rice. HRIS 24-178041 ACTIVE

(9) Structural Analysis of Flexible Pavements. To determine the adequacy of elastic or viscoelastic layer system theories to predict observed pavement responses. Kenis HRIS 24-102090 ACTIVE

(10) Aerodynamic Investigation of Cable-Stayed Bridge Models. Determination of flutter velocities by means of wind tunnel tests on scaled section models subjected to both laminar flow and scaled turbulence conditions. Bosch. HRIS 25-103012 ACTIVE

(11) Aerodynamic Studies of the East Huntington Cable-Stayed Bridge. Investigations of various proposed sections of the bridge, using models. Bosch. HRIS 25-153597 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

a. (12) Application of Bounding Methods to Predict Impact Response of Obliquely Struck Railing Structures. To develop prediction methods for such impacts. Oskard. HRIS 25-192608 ACTIVE

(13) Dynamic Loadings of Skewed Bridges. Experimental investigation of the dynamic behavior of such bridges. Cooper. HRIS 25-178034 ACTIVE

(14) Earthquake Performance of Highway Bridges. To evaluate and interpret strong motions recorded by seismic instrumentation and evaluate structural damage following severe earthquakes. Cooper. HRIS 25-153608 ACTIVE

(15) Field Testing of Oahe Resevoir Bridge, Mobridge, South Dakota. Determine actual live load stress and deflections, compare with calculated values, and estimate fatigue life of the bridge. Krylowski. HRIS 25-153617 ACTIVE

(16) Interaction Diagrams for Curved Girder Bridges. To present a technique for developing these diagrams to determine structural behavior of horizontally curved girder bridges. Cooper. HRIS 25-136188 ACTIVE

(17) An Investigation of Scale Effects between Model and Full-Scale Pile Groups. Comparison of load deformation and load transfer behavior of model and full-scale pile groups. HRIS 25-192637 ACTIVE

(18) Polymer Impregnation of Prefabricated Prestressed Structural Deck Members. Evaluation of alternate designs using both full and partial impregnation of precast concrete deck members. Garren. HRIS 25-156763 ACTIVE

(19) Stress History Studies - Eyebar and Plate Girder Bridges in Pennsylvania. To inspect the bridges with the FHWA eyebar probe and compare measured stress concentrations to observed crack patterns. Krylowski. HRIS 25-192616 ACTIVE

(20) Thermographic Inspection of Structural Concrete for Honeycombing. To evaluate the effectiveness of thermographic measurements and recording for determing location and extent of honeycombing. Koca. HRIS 25-192617 ACTIVE

(21) Wind Tunnel Tests of a Truss-Stiffened Cable-Stayed Bridge Model. To test the bridge for flutter and vortex shedding stability, measure static lift, drag and moment forces. Bosch, Cheng. HRIS 25-192621 ACTIVE

(22) Design of Emulsified Asphalt Paving Mixtures. To develop a rational design procedure for durable emulsified paving mixtures and ascertain cost-energy savings of emulsified asphalt pavement as opposed to hot plant mix pavements. Fong. HRIS 31-153607 ACTIVE

(23) Dilation Durability Test on Concrete. Tests on a number of aggregates of varying properties and service histories with respect to D-cracking and determine how their performance differs and relates to other more easily determined tests. Clear. HRIS 32-020343 ACTIVE

(24) Freeze-Thaw Properties of Portland Cement Concretes Made with Natural Pozzolans and Fly Ash. Study of the effects on concrete with varying mixtures of pozzolan and [redacted] determine freeze-thaw, scaling, resistance, chloride permeability, skid resistance, strength, shrinkage, abrasion resistance, modulus of elasticity. Pasko. HRIS 32-136185 ACTIVE

(25) Internally Sealed Concrete. Document materials properties, develop low cost, low energy usage heat treatment, perform pilot study on lower cost wax beads, and on internally sealed concrete with low quality aggregates. Clear. HRIS 32-136190 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

a. (26) Investigation of Present Aggregate Gradation Control Practices and the Development of Short Cut or Alternative Test Methods. To investigate and evaluate short cut or alternative methods, analyze statistical data on gradation testing and make recommendations for new sampling and testing frequencies. Richardson. HRIS 33-136077 ACTIVE

(27) Alternate Styrene Butadiene Latex Modifiers for Bridge Deck Overlays. To develop procedures and specifications to permit non-proprietary use of a durable, low permeability latex concrete for overlays. Clear, Chollar. HRIS 34-153600 ACTIVE

(28) Epoxy Thermoplastic Pavement Marking Material; Specification and Testing. To develop a comprehensive composition specification for an epoxy thermoplastic material. Chollar. HRIS 34-192610 ACTIVE

(29) Evaluation of the Bond Behavior of Epoxy Coated Reinforcing Bars. An evaluation of bond behavior of these bars as compared with uncoated bars, under static and fatigue loading conditions. Ballinger. HRIS 34-136181 ACTIVE

(30) Material Characterization and Toughness Tests. To provide materials properties test support to complement on-going research and provide a mechanism for quick-reaction test support for State highway departments. Chisholm. HRIS 34-192606 ACTIVE

(31) Quality vs Impact Properties for Bridge Steels. Nondestructive and destructive tests of typical bridge steels to determine chemical and physical properties. McGogney. HRIS 34-153630 ACTIVE

(32) Time to Corrosion of Reinforcing Steel versus Various Parameters and Design Construction. To determine the relative time to corrosion of steel in concrete when slabs are subjected to periodic wetting with a 3 percent sodium chloride solution: determine effect of coating breaks on effectiveness of electrostatically applied, powdered epoxy rebar coatings. Clear. HRIS 34-082051 ACTIVE

(33) Slip Coefficient of ASTM A588 Steel Faying Surfaces. A study of the slip behavior of friction-type joints with coated faying surfaces and comparison with results from a similar project being conducted at the University of Texas. Cayes. HRIS 34-192615 ACTIVE

(34) Evaluation of Aggregate Shape and Surface Roughness as Related to Frictional Characteristics. Develop methods to quantitatively measure aggregate shape and surface characteristics and evaluate the relative importance of these factors in developing frictional forces. Forster. HRIS 35-153611 ACTIVE

(35) Automatic Controllers for Hydraulically Powered Deicing-Chemical Spreaders. A survey of the users of this equipment to determine if spreading rate can be accurately controlled, and the environmental and economic costs of snow-fighting operations lowered. Besselievre. HRIS 41-153601 ACTIVE

(36) Accident Analysis and Computer Simulation of Protected Permission Left Turn Phasing. To determine the effect of protected/permissive left turn phasing on traffic operations and safety. Warren. HRIS 51-178033 ACTIVE

(37) Accident Analysis at Rail-Highway Grade Crossings. A review and analysis of existing data on such accidents, analysis of accident potential and severity of train and non-train involved accidents by regression techniques. Coleman. HRIS 51-106604 ACTIVE

(38) Feasibility of Floodlighting in Construction Zones. To determine if floodlighting would reduce accident potential. Lum. HRIS 51-178036 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

a. (39) Grade Crossing Safety Surveillance Information System. To develop and validate equations to predict severity of accidents at crossings with various forms of protective and warning devices. Stewart. HRIS 51-178037 ACTIVE

(40) Measures of Effectiveness of Railroad-Highway Grade Crossing Improvements. To establish appropriate methodology for measuring and evaluating effectiveness of safety improvements at grade crossings in terms of available grade crossing inventory, accident and economic data. Stewart. HRIS 51-153623 ACTIVE

(41) Friction in Cornering and Braking, Steady State and Transient. To determine if there are correlations between tire-pavement friction measured in steady state and transient modes, and find the best mode of testing that correlates with friction demands of cornering and braking. Hegmon. HRIS 53-107425 ACTIVE

(42) Vibration Measurement of Truck Cabs and Driver Seats. To investigate the effects of various operating conditions on the vibrational environment in the cab and the amount of vibrations transmitted to the operator by different seating systems. Liu. HRIS 53-192620 ACTIVE

(43) Power Failure at Signalized Intersections. To identify and determine the extent of potential traffic accidents due to power failure at such intersections. Lum. HRIS 54-178039 ACTIVE

(44) Signalized Intersections Controls for Pedestrians. To develop and test several hypotheses for use and operation of signal controls for pedestrians. Robertson. HRIS 54-178040. ACTIVE

(45) Highway Advisory Radio (HAR) in Construction Areas. To determine the time at which a HAR should be presented to the motorist and the motorists preference for the length of the message. Gatling. HRIS 54-178038 ACTIVE

(46) Inductive Loop Detector Evaluation Program. To develop an interactive computer program to allow traffic engineers to simulate an inductive loop detector and evaluate its performance. Mills. HRIS 54-082066 ACTIVE

(47) Simulation of Traffic Management Strategies. To apply traffic simulation models to the evaluation of traffic management strategies making the necessary changes in the models. Radelat. HRIS 54-153634 ACTIVE

(48) Aids for Motorist Recovery from Freeway Navigation Errors. To determine feasibility of developing such a system in urban areas. Mast. HRIS 54-153598 ACTIVE

(49) Analyzing Microprocessor Capability for an Advanced Traffic Control Strategy Surveillance Requirement. To examine this capability to make real time measurements while functioning as a traffic controller. Roehl. HRIS 54-192607 ACTIVE

(50) Complex Regulatory Signs for Parking and Standing. To develop signs which can be quickly and accurately interpreted. Gordon. HRIS 54-153604 ACTIVE

(51) Controlled Field Study of Diversionary Highway Guide Sign Variables. To investigate the influence of diversionary highway guide signs on dirver's ability to process and interpret directional information. Mast. HRIS 54-082064 ACTIVE

(52) An Evaluation of Metric Speed Limit Signs. To evaluate four different types of signs proposed to show metric speed limits. Klipple. HRIS 54-192611 ACTIVE

(53) Feasibility for Providing Increased Simulator Capability in Stimulus Projection and Control. To determine performance requirements, define concepts, design and test a system to increase simulator capabilities in this area. Roberts. HRIS 54-192612 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

a. (54) Traffic Signal Synchronizer. To develop a method of wireless interconnection for traffic signal controllers, provide a low cost, versatile, accurate alternate method of coordination through the state-of-the-art technology. Reynolds. HRIS 54-192618 ACTIVE

(55) Travel Surveys. To provide major information resources to assist transportation planning and program analysis activities at local and national levels in a Nationwide Personal Travel Survey (NPTS). HRIS 55-160018 ACTIVE

(56) Field Evaluation of Weigh-in-Motion Instrumentation. Install and evaluate the instrumentation system developed for FHWA and Case Western Reserve University. Bosch, Krylowski. HRIS 55-192613. ACTIVE

(57) Rapid Interpretation of Aircraft Scanner Data using Computer Interactive Systems. Analyze scanner tapes to classify salsand geology and compare with conventional mapping methods for accuracy and cost effectiveness. Ealy. HRIS 61-153631 ACTIVE

(58) Effect of Standard Drying Procedures on Soil Test Values. To determine how methods now acceptable to AASHTO and ASTM procedures affect the results of standard soil tests. Blystone. HRIS 61-192609 ACTIVE

(59) Development of Laboratory Techniques for Measurement of Swell Potential Clays. To examine role of capillarity in sampling and testing, means to expedite laboratory testing when cracks are present in soil, and the influence of overconsolidation on creep behavior, equilibrium moisture content and suction. Ealy. HRIS 64-082053 COMPLETE

b. Contract Research

(1) Communications with County Governments. To improve the delivery of federal-aid transportation program information to local governments. National Association of Counties Research Foundation, Washington, D. C. HRIS 11-192628 (Citations) ACTIVE

(2) Construction Engineering Manpower Management. To develop a manpower management system. New Mexico Highway Department, Santa Fe., New Mexico HRIS 11-192899 ACTIVE

(3) Measures of Effectiveness for Transportation System Management. To define a set of objectives for use in the traffice management process, develop measures for effectiveness of degree to which these objectives are reached, etc. JHK and Associates, Alexandria, VA HRIS 11-177977 (Citations) ACTIVE

(4) Optimum Staging of Projects in a Highway Plan. To develop the logic and computer programs to determine the optimum sequence of implementing a highway plan. Schimpeler-Corradino, Associates, Louisville, Kentucky. HRIS 11-100143 COMPLETE

(5) Pavement Management. To develop a slide/tape program to illustrate and explain the importance of a systematic and comprehensive management program. Utah Department of Transportation, Salt Lake City, Utah. HRIS 11-193138 ACTIVE

(6) Practicability of Automated Highway Systems. To evaluate the generic concept designs and conduct research to determine the technical, human factors, social, economic, legal and environmental feasibilities. Calspan Corporation, Buffalo, New York. HRIS 11-156674 ACTIVE

(7) Public Transportation -- Element of the Urban Transportation System. To develop a training course for highway engineers taking on new responsibilities in the field of public transportation. JHK and Associates, Alexandria, Virginia HRIS 11-157053 (Citations) ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (8) Rational Determination of Priority Targets for Research and Development. To develop a practical procedure for use in Federal Budget and planning processes for setting priorities in highway research decisions. Stanford Research Institute. Menlo Park. California. HRIS 11-100146 COMPLETE

(9) Street Design -- An Element on the Urban Transportation Operations Training Program. To provide a training course for highway design engineers in the design of streets in urban areas. JHK and Associates. Alexandria. Virginia HRIS 11-157060 ACTIVE

(10) Collection of Disaggregate Data Set. To assemble a state-of-the-art data set of travel information to support disaggregate and other urban travel demand model research. Charles River Associates. Inc.. Boston. Massachusetts. HRIS 12-153766 (Citations) ACTIVE

(11) A Comparative Analysis of Urban Transportation Requirements. An analysis of transportation service in 20 U.S. and foreign urban areas. including economics. organization and administration of transportation planning. implementation and operation of public and private systems. International Road Federation. Washington. D.C. HRIS 12-111171 (Citations) COMPLETE

(12) Development of Manuals for Transportation Planning in Small Urban Areas. To produce a set of manuals encompassing all details necessary to carry out a transportation planning study in a small urban area. COMSIS Corporation. Wheaton. Maryland. HRIS 12-153746 ACTIVE

(13) Feasibility Analysis and Design Concepts and Criteria for Community Wide Separate Pedestrian Networks. To determine feasibility. design concepts and criteria for separate pedestrian networks in existing and in new planned areas. RTKL Associates. Incorporated. Baltimore. Maryland. HRIS 12-135112 ACTIVE

(14) Fundamental Studies in Automatic Longitudinal Control of Vehicles. The development of techniques for generating the essential control reference information and the subsequent control of vehicles in high speed. short time headway situations. Ohio State University. Columbus. Ohio. HRIS 12-135713 ACTIVE

(15) Fundamental Studies in Automatic Vehicle Control. A study of the problems involved in developing a system for control of vehicles in an automated highway operation. Ohio State University. Columbus. Ohio. HRIS 12-177868 (Citations) ACTIVE

(16) Identification and Feasibility of Demand Incentives for Non-motorized Transportation. To identify and evaluate demand incentives for encouraging bicycle and pedestrian activities in urban areas for utilization trip purposes. Barton-Aschman Associates. Minneapolis. Minnesota. HRIS 12-156593 ACTIVE

(17) Investigation of High-Volume. Heavy Truck. Intercity Freight Corridors. Determine magnitudes and locations of these corridors where high volumes cause inefficiencies. safety hazards and congestion and analyze potential solutions. R. J. Hansen Associates. Rockville. Maryland. HRIS 12-192799 ACTIVE

(18) National Aggregate Transportation Planning Method. A review of TRANS. FHWA's National Aggregate Transportation Planning Method and recommendations for future aggregate transportation planning systems. Charles River Associates. Cambridge. Massachusetts. HRIS 12-153778 (Citations) COMPLETE

(19) National Evaluation of the Federal Highway Administration Rural Demonstration Program. Evaluation of the program in terms of service concepts. planning strategies marketing. funding. etc. Urban Institute. Washington. D.C. HRIS 12-192605 ACTIVE

(20) Southwest Corridor Carpool/Transit Study. Study of exclusive bus lanes. ramps park-n-ride facilities in addition to reconstructed bus routes. Chicago Department of Public Works. Chicago. Illinois. HRIS 12-177604 (Citations) COMPLETE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (21) Statewide School Transportation Survey. To determine mode specifics, school associated travel of faculty, students and staff of schools from elementary to university level. Rhode Island Statewide Planning Program, Providence, Rhode Island. HRIS 12-177905 (Citations) COMPLETE

(22) Transit Travel Estimating Technique. To develop a modal split technique for estimating travel in Rhode Island. Urban Transportation Systems Associates, Newton, Massachusetts. HRIS 12-192828 ACTIVE

(23) Urban Curbside Pickup and Delivery Operations. Surveys in six cities of pickups and deliveries, and collection of data on curbside loading effects on surface traffic performance. Polytechnic Institute of New York, Brooklyn, New York. HRIS 12-177842 ACTIVE

(24) Urban Corridor Demonstration Program - Improved Bus. To facilitate usage of public transportation and attract commuters from auto to public transit, with a final phase concerned with bus priority at signalized intersections. City of Dallas, Texas. HRIS 12-177919 (Citations) ACTIVE

(25) Decision Models for Transportation Network Capacity Expansion. To develop computer aided techniques to help determine which highway improvement will be most helpful to the overall traffic system. University of Illinois, Urbana, Illinois. HRIS 13-177614 ACTIVE

(26) Garret County Economic Planning Study. To identify transportation investments required to serve forecast economic development. Hammer Siler George Associates, Washington, D.C. HRIS 13-192638 (Citations) ACTIVE

(27) Modal Split Model. To develop a transit model to forecast transit travel as a segment of total person trip forecasts that will be sensitive to changes in highway and transit systems. Urban Transportation Systems Associates, Newton, Massachusetts. HRIS 13-193052 ACTIVE

(28) Recreation Travel Forecast Model. To develop refined recreational models to estimate travel for summer Sundays and average annual week-day travel. Urban Transportation Systems Associated, Newton, Massachusetts HRIS 13-193053 (Citations) COMPLETE

(29) Review of Concepts and Methodologies in Behavioral Geography for the Revision of Current Travel Demand Modeling. To review and suggest directions for future research into constraint-oriented models and related new small sample methodologies for data collection. Northwestern University, Evanston, Illinois. HRIS 13-192709 (Citations) ACTIVE

(30) Highway Investment Study. To develop, test and document computerized models for analyzing and programming highway investments at the state or regional level. Multisystems, Incorporated, Cambridge, Massachusetts. HRIS 14-048555 (Citations) ACTIVE

(31) Perform an Assessment of the Proposed I-670 Project in Columbus, Ohio - Social Economic, Environmental. To assess the project on the basis of several alternatives and design a public involvement program. Battelle Columbus Laboratories, Columbus, Ohio. HRIS 15-156721 (Citations) ACTIVE

(32) Goods Movement Analysis. To develop an overview of commodity movements in Rhode Island that will provide an indication of the impact of changes in goods movement by certain modes on the other modes. Urban Transportation Systems Associates, Newton, Massachusetts. HRIS 15-177904 (Citations) COMPLETE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (33) Develop and Update "Social Impact Assessment" - A Source Book for Highway Planners. To prepare three volumes of this Sourcebook, covering a user's guide to the entire eight volumes, an inventory of social impact assessments of highway projects, and an addendum to the initial literature review. BDM Corporation, McLean, Virginia. HRIS 15-177970 (Citations) COMPLETE

(34) Effect of Urbanization on Small Stream Flow. To select the most promising method of estimating the effect of urbanization on flood peaks of small watersheds. Resource Analysis Incorporated. Cambridge, Massachusetts. HRIS 15-153785 ACTIVE

(35) Handbook on Barrier-Free Design of Highway Facilities for the Handicapped Pedestrian. To develop measures that can be applied to pedestrian facilities to aid the elderly and handicapped. Georgia Institute of Technology, Atlanta, Georgia. HRIS 16-192668 ACTIVE

(36) Provisions for Elderly and Handicapped Pedestrians. To identify the elderly and handicapped pedestrian subgroups, determine safety and functional difficulties of each, and develop effective solutions, and prepare a manual to guide planners. Georgia Institute of Technology, Atlanta, Georgia. HRIS 16-048987 ACTIVE

(37) Requirements and Specifications for Off-hours Delivery. To identify financial and institutional restraints which impede off-hours truck pickup and delivery operations in CBD's. Organization for Environmental Growth, Inc., Washington, D.C. HRIS 16-192632 ACTIVE

(38) Traveler's Information Services. To prepare a booklet of design concepts for providing informational services at safety rest areas. Florida Department of Transportation, Tallahassee, Florida. HRIS 16-192656 ACTIVE

(39) Acoustical Surveying Utilizing Holography. To demonstrate and evaluate the acoustic surveying site exploration system utilizing holographic presentation. Holosonics, Incorporated, Annandale, Virginia. HRIS 17-193154 ACTIVE

(40) Air Quality of Intermittent Cut-and-Cover Highway Tunnels. To develop principles of passive ventilation through openings in cut-and-cover tunnels and similar structures and development of maximum use criteria for natural vents. Jet Propulsion Laboratory, Pasadena, California. HRIS 17-192544 ACTIVE

(41) Analysis, Experimental Studies, and Evaluation of Control Measures for Air Flows and Quality near Highways. Development of principles and guidelines for management of highway vehicles air contaminants and measure air flows as affected by traffic conditions and roadway geometry. Stanford Research Institute, Menlo Park, California. HRIS 17-153458 COMPLETE

(42) Highway Air Quality Impact Appraisals. Develop guidelines and procedures for incorporation of air quality considerations in the highway planning and design process. Systems Applications Incorporated, San Rafael, California. HRIS 17-153507 ACTIVE

(43) Highway Applications of Alternative Energy Sources. Prepare guide to alternative energy sources and their applications for highway engineers. PLT Consulting Services. Frederick, Maryland HRIS 17-192802 ACTIVE

(44) Highway Noise Criteria. Develop a methodology for assessment of human response to general traffic noise. National Bureau of Standards, Washington, D. C. HRIS 17-192626 ACTIVE

(45) Improvement to Highway Noise Prediction Procedures. To identify and correct sources of prediction error and inefficiencies in the prediction procedure and develop a user's manual. Science Applications, Incorporated, McLean, Virginia. HRIS 17-157031 ACTIVE

UNITED STATES - NATIONAL AGENCIES

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (46) Improving the Residential Street Environment. Determine methods for control, management and restraint of traffic on local residential streets. De Leuw Cather and Company, San Francisco, California. HRIS 17-192536 ACTIVE

(47) Measurement and Prediction of Noise from Nearby Air and Rail Operations for Highway Projects. To prepare a manual for evaluating and predicting community noise levels resulting from air, rail and highway operations. Transportation Systems International, Vienna, Virginia. HRIS 17-193280 ACTIVE

(48) Probabilistic Approach for the Near-Roadway Impact of Nitrogen Dioxide. To develop an approach and an algorithm for estimating the probability that a given highway facility will violate a one-hour national ambient air quality standard. University of Virginia, Charlottesville, Virginia HRIS 17-193214 ACTIVE

(49) Preparation of Urban Transportation Energy Conservation Manual. To develop a set of analytical tools for use by metropolitan planning organizations in analyzing the energy conservation potential of candidate urban transportation actions. Cambridge Systematics, Incorporated, Cambridge, Massachusetts. HRIS 17-157051 COMPLETE

(50) Propagation of Highway Noise over Finite Impedance Ground Planes. To examine this propagation through mathematical treatments of wave propagation over absorbing ground planes. Pennsylvania State University, University Park, Pennsylvania. HRIS 17-156785 ACTIVE

(51) Application of Acoustical Scale Modeling to Traffic Noise Propagation at Complex Urban/Suburban Freeway Sites. To develop a quick, easy-to-use, free-flowing traffic-noise prediction method for typical sites. Bolt, Beranek and Newman, Cambridge, Massachusetts. HRIS 21-153763 ACTIVE

(52) Assessment of the Probability of Injury in the Analysis and Testing of Bridge Rails. Computer simulation to determine probability of injury for cars and buses of various classes impacting roadside and bridge barriers. Chi Associates, Incorporated, Arlington, Virginia. HRIS 21-193147 ACTIVE

(53) Computer Services Support for Highway Location, Design and Operation to Reduce Photochemical Smog Formation. To supply computer support to a contractor to reduce smog. University of California, Berkeley, California. HRIS 21-153477 ACTIVE

(54) Concrete Median Barrier Research. To relate construction costs and detail design variations to changes in collision performance and identify optimum performance configurations for these barriers. Southwest Research Institute, San Antonio, Texas. HRIS 21-045293. ACTIVE

(55) Cost Effectiveness of Small Highway Sign Supports. To develop a comprehensive manual on small highway sign support systems. Texas Transportation Institute, College Station, Texas. HRIS 21-193092 ACTIVE

(56) The Development of a Cost-Effectiveness Model for Guardrail Selection. To develop a manual covering parameters for eleven configurations and criteria analysis of system effectiveness under various dynamic impact conditions. Southwest Research Institute, San Antonio, Texas. HRIS 21-135978 ACTIVE

(57) Development of an Interactive Graphics-Aided Design System. To develop an IGADS to provide design personnel with an overall system that will allow input and review output in a graphical form. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 21-156937 (Citations) ACTIVE

(58) Development of Safety Utility Poles. To develop concepts which will enable currently non-frangible utility poles to be made breakaway on a retrofit basis. Southwest Research Institute, San Antonio, Texas. HRIS 21-156938 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (59) Emergency Escape Ramps for Runaway Heavy Vehicles. A synopsis of current practices in regard to design, construction and operational techniques. Tennessee Department of Transportation, Nashville, Tennessee. HRIS 21-193059 (Citations) COMPLETE

(60) Evaluation and Analysis of Decision Sight Distance. To evaluate under highway operating conditions, decision sight distance criteria and recommend operationally valid values, to be used in design. Biotechnology, Incorporated, Falls Church, Virginia. HRIS 21-177966 ACTIVE

(61) Evaluation of a Pilot Installation of an Energy Absorbing Bridge Rail. A study of the cost and construction procedures for retrofitting a collapsing ring energy absorbing bridge rail to the parapet of an existing bridge. Virginia Highway and Transportation Research Council, Charlottesville, Virginia HRIS 21-136040. COMPLETE

(62) Evaluation of Experimental Barricades. To evaluate the field performance of Type III traffic barricades designed to breakway upon contact by a vehicle. Georgia Department of Transportation, Forest Park, Georgia. HRIS 21-177573 ACTIVE

(63) Evaluation of Light Poles Made of "Captive Columns." Vehicle impact tests of the structural adequacy of these light standards. Nevada Department of Highways, Carson City, Nevada. HRIS 21-192880. FUTURE

(64) Highway Geometric Design Consistancy Related to Driver Expectancy. To develop and evaluate procedures and criteria to identify and correct inconstant highway geometric design elements on rural non-freeway facilities. Texas Transportation Institute, College Station, Texas. HRIS 21-193102 ACTIVE

(65) Implementation of Highway Safety Improvement Programming Procedures. An evaluation of the programming method for practicality and utility in developing roadside obstacle removal programs. Alabama State Highway Department, Montgomery, Alabama. HRIS 21-192451. ACTIVE

(66) Implementation of Highway Safety Improvement Programming Procedures. An evaluation of the programming method for practicality and utility in developing roadside obstacle removal programs. Florida Department of Transportation, Tallahassee, Florida. HRIS 21-192651 ACTIVE

(67) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan for determining effectiveness of the selected improvements. Arizona Department of Transportation, Phoenix, Arizona. HRIS 21-192467 ACTIVE

(68) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan for determining effectiveness of the selected improvements. Colorado Department of Highways, Denver, Colorado. HRIS 21-192573 ACTIVE

(69) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan for determining effectiveness of the selected improvements. Idaho Department of Transportation, Boise, Idaho. HRIS 21-192685 ACTIVE

(70) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan for determining effectiveness of the selected improvements. Kansas State Highway Commission, Topeka, Kansas. HRIS 21-192749 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (71) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan for determining effectiveness of the selected improvements. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 21-177935 ACTIVE

(72) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of the selected improvements. Michigan Department of State Highways and Transportation, Lansing, Michigan. HRIS 21-192837 ACTIVE

(73) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of the selected improvements. Minnesota Department of Transportation, St. Paul, Minnesota. HRIS 21-192854 ACTIVE

(74) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of the selected improvements. Montana Department of Highways, Helena, Montana. HRIS 21-192874 ACTIVE

(75) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of selected imporvements. Nebraska Department of Roads, Lincoln, Nebraska. HRIS 21-192878 ACTIVE

(76) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine the effectiveness of selected improvements. Nevada Department of Highways, Carson City, Nevada. HRIS 21-192881 ACTIVE

(77) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine the effectiveness of selected improvements. New Jersey Department of Transportation, Trenton, New Jersey. HRIS 21-192894 ACTIVE

(78) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and the plan to determine the effectiveness of selected improvements. New Mexico State Highway Department, Santa Fe, New Mexico. HRIS 21-192900 ACTIVE

(79) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine the effectiveness of selected improvements. North Carolina Department of Transportation, Raleigh, North Carolina. HRIS 21-192956 ACTIVE

(80) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine the effectiveness of selected improvements. Ohio Department of Transportation, Columbus, Ohio. HRIS 21-192988 ACTIVE

(81) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine the effectiveness of selected improvements. Oregon Department of Transportation, Salem, Oregon. HRIS 21-193008 ACTIVE

(82) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of selected improvements. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 21-193029 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (83) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of selected improvements. Tennessee Department of Transportation Nashville, Tennessee. HRIS 21-193061 ACTIVE

(84) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highways safety improvements and use the plan to determine effectiveness of selected improvements. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 21-177935 ACTIVE

(85) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of selected projects. Utah Department of Transportation, Salt Lake City, Utah. HRIS 21-193137. ACTIVE

(86) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine the effectiveness of selected improvements. West Virginia Departmert of Highways, Charleston, West Virginia. HRIS 21-193246 ACTIVE

(87) Implementation of Highway Safety Projects Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of selected improvements. Wisconsin Department of Transportation, Madison, Wisconsin. HRIS 21-193259 ACTIVE

(88) Implementation of Highway Safety Project Evaluation Procedures. Develop an evaluation plan for highway safety improvements and use the plan to determine effectiveness of selected projects. Wyoming State Highway Department, Cheyenne, Wyoming. HRIS 21-193266 ACTIVE

(89) Joint Sealing with Various Sealants on Curbs. To determine the effect of curbs on performance of impact attenuators. Dynamic Science Corporation Phoenix, Arizona. HRIS 21-192470 ACTIVE

(90) Modification for Achieving High Performance Barriers. To develop new concepts for high performance and multi-application barriers and varify performance by testing on models and at full-scale. Eyring Research Institute, Provo, Utah. HRIS 21-048603 ACTIVE

(91) New Concepts for Traffic Barrier Systems. To develop and produce hardware for testing guardrail and median barrier design. Southwest Research Institute, San Antonio, Texas. HRIS 21-135991 ACTIVE

(92) Operational Remote Sensing Techniques for Transportation Mapping. Development of a training course on remote sensing and interpretation methods of aerial photography. University of Tennessee, Tullahoma, Tennessee. HRIS 21-193063 ACTIVE

(93) Pavement and Geometric Design Criteria for Minimizing Highway Hydroplaning. To investigate all aspects of pavement drainage as it relates to hydroplaning, its cause and correction. Texas Transportation Institute, College Station, Texas. HRIS 21-193107 ACTIVE

(94) Safety and Location Criteria for Bicycle Facilities. To derive strategies for safe movement of bicycles, motor vehicles and pedestrian on shared facilities. DeLeuw, Cather and Company, San Francisco, California. HRIS 21-11170. COMPLETE

(95) Tire and Pipe Attenuator Handbook. To prepare a manual of design details for attenuators of tire/sand, scrap tire and corrugated steel pipe. Mobility Systems and Equipment Company, Los Angeles, California. HRIS 21-192551 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (96) Traffic Railing Impact, Hydroplaning Potential. Specifications for measuring systems for traffic railing impacts and hydroplaning potential. Southwest Research Institute, San Antonio, Texas. HRIS 21-193084 ACTIVE

(97) Urban Street Design (UTOT) Training Course. To develop a one-week seminar type training course. JHK and Associates, Emeryville, California. HRIS 21-177525 (Citations) ACTIVE

(98) Analysis of Highway Impact on Water Quality in Texas. To measure water pollutants washed from a bridge using a variety of methods of chemical analyses over several seasons. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 22-177931 ACTIVE

(99) Bicycle-Safe Grate Inlets Study. To develop new designs and improve existing designs of inlets to maximize bicycle and pedestrian safety and hydraulic efficiency. Bureau of Reclamation, Denver, Colorado. HRIS 22-134783. ACTIVE

(100) Characteristics of Highway Runoff. An analysis of highway runoff and determine relationship between characteristics of resuspended roadway dust and that runoff. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 22-177933. (Citations) ACTIVE

(101) Compilation of Scour Data Based on Mississippi and Louisiana Information. Analysis of scour data around bridge piers based on USGS bridge site reports and hydrographic survey data. TYE Engineering Company, Fairfax, Virginia. HRIS 22-193161 ACTIVE

(102) Debris Problems in the River Environment. Determine magnitude of the problem and examine trapping factors. TYE Engineering Company, Fairfax, Virginia. HRIS 22-193162 ACTIVE

(103) Evaluation of Coatings for Highway Culverts. An evaluation of field performance of and identify new types of culvert coatings, based on available information of kinds in current use. PSC Professional Service Group, Narberth, Pennsylvania. HRIS 22-193051 ACTIVE

(104) Hydraulic Flow Resistance Factors for Corrugated Metal Conduits. To update a 1970 publication taking into account research on helical corrugated pipe. Normann, Shillington, Pennsylvania HRIS 22-193050 ACTIVE

(105) Hydrology for Transportation Engineers. Prepare a reference manual and training course covering essential principles and procedures for hydrologic studies. Colorado State University, Fort Collins, Colorado. HRIS 22-192581 ACTIVE

(106) Infiltration Drainage Design Manual for Highway Facilities. To collect and evaluate available information on the subject and assemble in a design manual. California Department of Transportation, Sacramento, California. HRIS 22-177483. ACTIVE

(107) Laboratory Study of Scour Depths at Culvert Outlets. To determine scour depths for several sizes of cohesive soils and sizes of culverts. Colorado State University, Fort Collins, Colorado. HRIS 22-192582 ACTIVE

(108) Manual for the Design of Storm Water Pumping Stations for Highway Facilities. To prepare this manual for use by highway design personnel. William F. Lever and Associates, Long Beach, California. HRIS 22-192568 ACTIVE

(109) Manual of Design for Storm Drainage of Highways in Urban Areas. To prepare this manual for the use of highway design personnel. Reitz and Jens, Incorporated, St. Louis, Missouri. HRIS 22-192872 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (110) Methods for Assessment of Stream-Related Hazards to Highways. To develop assessment approaches which consider geomorphology and land-use. Colorado State University, Fort Collins, Colorado. HRIS 22-177557 ACTIVE

(111) Model Bridge Site Report. To develop a manual on risk analysis procedure for designing hydraulic openings for drainage structures. Geological Survey, NSTL Station, Mississippi. HRIS 22-192857 ACTIVE

(112) Modification of SCS Method for Direct Flood Prediction. To develop an improved procedure to predict the rainfall excess pattern for any rainfall pattern and continuously varying antecedent soil moisture conditions. Colorado State University, Fort Collins, Colorado. HRIS 22-192583 ACTIVE

(113) New Structural Concepts for Culvert Installations. To develop new concepts for increasing span of corrugated metal culverts and evaluate the feasibility of using soil stabilization for more economical culvert structures. Naval Civil Engineering Laboratory, Port Hueneme, California. HRIS 22-153524. ACTIVE

(114) New Structural Concepts for Culvert Installations. To develop new concepts for increasing the span of corrugated metal culverts and evaluate the feasibility of using soil stabilization for economical culvert structures. Notre Dame University, Notre Dame, Indiana. HRIS 22-192729 ACTIVE

(115) Performance of Stream Channel Changes. To document highway channelization performance and isolate instability factors. Geological Survey, Menlo Park, California. HRIS 22-177520. ACTIVE

(116) Preparation of Manual Containing Guidelines and Design Criteria for Safe Inlet Grates. To develop specifications and manuals for designing safe and effective inlet gratings. Gingery Associates, Englewood, California. HRIS 22-134794 COMPLETE

(117) Revision of Water Quality Manuals (Volumes I through IV). To revise and update the set of water quality manuals reflecting professional practice. Kenneth D. Kerri, Sacramento, California. HRIS 22-135357. ACTIVE

(118) River Mechanics Manual Addendum. To supplement the manual entitled Highways and the River Environment, for the investigation, analysis and design of a river crossing. University of Idaho, Moscow, Idaho, Moscow, Idaho. HRIS 22-152669 COMPLETE

(119) Roughness Coefficients on Heavily Vegetated Floodplains. To provide a method for estimating roughness coefficients. Geological Survey, Baton Rouge, Louisiana. HRIS 22-192774 ACTIVE

(120) Sources and Migration of Highway Runoff Pollutants. To identify sources of pollutants in runoff water and establish paths within the drainage system as well as into the receiving water. Envirex, Incorporated, Milwaukee, Wisconsin. HRIS 22-178016. (Citations) ACTIVE

(121) Urban Highway Storm Drainage Design Model. To develop a comprehensive computer design model. Water Resources Engineers: Camp, Dresse and McKee, Incorporated, Springfield, Virginia. HRIS 22-157067. ACTIVE

(122) Barrier Effectiveness: An Analysis of Noise Propagation and Source Location Effects. To develop a traffic noise propagation barrier attenuation model based on laboratory and field studies of effects of absorptive ground planes and traffic noise source location. Pennsylvania State University, University Park, Pennsylvania. HRIS 23-193037. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (123) Ecological Effects of Highways on Coastal Wetlands -- Atlantic Coast Region. To identify and estimate magnitude of ecological disturbances of highways on coastal wetlands and provide technology to minimize disturbances. Virginia Institute of Marine Science, Gloucester Point, Virginia. HRIS 23-157013. COMPLETE

(124) Ecological Evaluation of Wildlife Populations and Habitats Affected by Highway Development in Major Geographic Areas of the U.S. To determine effects of highway construction and operation on wildlife and their habitats and develop a system for predicting and evaluating the impact on plant and animal communities. Fish and Wild Life Service, Laurel, Maryland. HRIS 23-153747 ACTIVE

(125) The Effect of Highway Operation Practices and Facilities on Elk, Mule Deer and Pronghorn Antelope. To assess the effectiveness of deer-proof fences, methods of detecting animals on the highway, monitoring methods, and impact of snow fencing. Forest Service, Laramie, Wyoming. HRIS 23-157100 ACTIVE

(126) Environmental Engineering Investigation along the Yukon River - Prudhoe Bay Haul Road. Study of effects of freeze and thaw on plant communities along the road. Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. HRIS 23-156624. ACTIVE

(127) Interim Guidelines for Highways Constructed through Wetlands. Compile information on highway impacts, mitigating procedures and develop a manual. New England Research Incorporated, Worchester, Massachusetts. HRIS 23-192825 ACTIVE

(128) Planning, Location and Design of Safety Rest Areas. To develop a manual and training course covering essential princples of rest areas. Minnesota Department of Transportation, St. Paul, Minnesota. HRIS 23-192856. ACTIVE

(129) Second Generation Acoustic Probe. To redesign the acoustic height sensor for unambiguous operation and eliminate acoustic blackouts. Pennsylvania State University, University Park, Pennsylvania. HRIS 23-193043. ACTIVE

(130) Water Supply Systems and Wastewater Treatment and Disposal Systems for Safety Rest Areas. To develop a training course covering essential principles of design and operation of these systems. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 23-192862. ACTIVE

(131) Wetland Reconstruction. To develop wetland construction technology and prepare a manual on successful methodology. Environmental Alconcers Incorporated, Saint Michaels, Maryland. HRIS 23-192781. ACTIVE

(132) Wetland Soils and Drainage Mapping Using Airborne Sensing Techniques. To demonstrate cost effectiveness of these techniques for mapping soils data in wetlands. General Electric Company, Beltsville, Maryland. HRIS 23-192782. ACTIVE

(133) Computer Evaluation of Pavement Texture. To measure skid resistance and pavement texture using stereophotography, single line scanning and conventional texture measurement. ENSCO, Incorporated, Springfield, Virginia. HRIS 24-157007 (Citations) ACTIVE

(134) Criteria for Improvement of Pavement Surface Macrotexture. To develop guidelines on pavement macrotexture criteria, specifications and establish warrants for cost effectiveness. Midwest Research Institute, Kansas City, Missouri. HRIS 24-192865 ACTIVE

(135) Effects of Vehicle Size, Weight and Configuration on Pavement Performance and Maintenance. To determine effects in changes in these characteristics on performance and maintenance requirements. Austin Research Engineers, Incorporated, Austin Texas. HRIS 24-156942 COMPLETE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (136) Evaluation of New FHWA Overlay Design Procedures. To evaluate a new design method and compare its effectiveness with other methods now used or recommended by others. Resources International, Incorporated. Worthington, Ohio. HRIS 24-192998. ACTIVE

(137) Evaluation of Rigid Pavement Overlay Design Procedures. To evaluate current rigid pavement overlay design methods as a step towards developing a simplified procedure that can be judged against the "standard" method. Resources International, Incorporated, Worthington, Ohio. HRIS 24-192999 ACTIVE

(138) Evaluation of the Outflow Meter as a Measurement of Texture. To evaluate this device for measurement of pavement surface texture. Mississippi State Highway Department, Jackson, Mississippi. HRIS 24-177752. COMPLETE

(139) Evaluation of Rubber Asphalt as a Stress Absorbing Interlayer and a Binder for Seal Coat Construction. An evaluation of the field performance of this material to minimize reflective cracking and as a binder. Florida Department of Transportation, Gainesville, Florida. HRIS 24-192647 ACTIVE

(140) Evaluation of the Outflow Meter as a Measure of Texture. A field evaluation of this device to measure surface texture and its correlation to skid measurement parameters. Nebraska Department of Roads, Lincoln, Nebraska. HRIS 24-192876 ACTIVE

(141) Evaluation of the Outflow Meter as a Measure of Texture. A field evaluation of this device to measure surface texture and its correlation to skid measurement parameters. New Mexico State Highway Commission, Santa Fe, New Mexico. HRIS 24-177802. ACTIVE

(142) Evaluation of the Outflow Meter as a Measure of Texture. A field evaluation of this device to measure surface texture and its correlation to skid measurement parameters. West Virginia Department of Highways, Charleston, West Virginia. HRIS 24-178008. ACTIVE

(143) Fabrication of an Automated Device for Linear Traverse and Surface Texture Measurements. To use this device for making linear traverse measurements on pavement surfaces. Bausch and Lomb, Incorporated, Rochester, New York. HRIS 24-156659. ACTIVE

(144) Feasibility of Improving Distribution of Pavement Load and Wear. To evaluate the effect of varying vehicle loading configurations in reducing magnitude and distribution of the critical response parameters and relate these effects to extension of pavement life. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-192861 ACTIVE

(145) Field Test and Evaluation Center for Central and Western States. To maintain a test and evaluation center for standardizing skid resistance measuring device results. Texas Transportation Institute, College Station, Texas. HRIS 24-156952 ACTIVE

(146) Field Test and Evaluation Center for Eastern States. To maintain a test and evaluation center for standardization of skid resistance measuring device results. Ohio State University, Columbus, Ohio. HRIS 24-156716 ACTIVE

(147) Flexible and Composite Structures for Zero-Maintenance Pavements. To develop design and construction procedures for conventional heavy duty flexible and composite type pavement to minimize pavement deterioration and structural maintenance. Austin Research Engineers, Incorporated, Austin, Texas. HRIS 24-177915 ACTIVE

(148) Grade Severity Rating System. To determine the feasibility and format of a grade severity rating system applicable to large articulated commercial vehicles braking on long down grades. Systems Technology, Incorporated, Hawthorne, California. HRIS 24-177540 ACTIVE

(149) Innovative Materials and Techniques for Construction and Maintenance to Insure Skid Resistant Surfaces. An evaluation of currently used skid resistant treatments for their potential to provide and retain adequate levels of friction and texture. California Department of Transportation, Sacramento, California. HRIS 24-048913 COMPLETE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (150) In Situ Determination of the Chloride Content of Portland Cement Concrete in Bridge Decks. To develop and test a device to measure rapidly and non-destructively the chloride ion concentration in bridge decks at outermost mat of reinforcing steel. Columbia Scientific Industries Corporation, Austin, Texas. HRIS 24-156960 (Citations) ACTIVE

(151) Instrumentation of Test Trucks for Measuring Pavement Vehicle Interactions. Implement an instrumentation system for measuring the dynamic response of heavy, articulated trucks under experimental conditions and during highway operations. Systems Technology, Incorporated, Hawthorne, California. HRIS 24-177541 ACTIVE

(152) New Structural Systems for Zero Maintenance Pavements. To assess potential of innovative structural concepts for zero maintenance pavements. Dames and Moore, Bethesda, Maryland. HRIS 24-192601 ACTIVE

(153) Optical System for Pavement Surface Texture Measurements. To determine if adequate correlation can be achieved between light polarization and pavement surface properties. Naval Surface Weapons Center, Silver Spring, Maryland. HRIS 24-192800 ACTIVE

(154) Pavement Rehabilitation by Means Other than Overlay: Second Phase. To develop techniques and procedures for restoring quality of deteriorated pavements without recourse to overlays. Delon Hampton and Associates, Silver Spring, Maryland. HRIS 24-192780 ACTIVE

(155) Post Construction Evaluation of Sulphur Asphalt Test Sections. An evaluation of service performance of experimental pavements using sulphur-asphalt binders. Texas Department of Highways and Public Transportation, Austin, Texas. HRIS 24-156965 (Citations) ACTIVE

(156) Prediction of Layered Properties Using an Inverse-n-layered Program. To integrate the inverse viscoelastic n-layered computer program with the latest VESYS structural subsystem, and verify predicted layer material response properties. Georgia Institute of Technology, Atlanta, Georgia. HRIS 24-192670. ACTIVE

(157) Predictor Model for Seasonal Variations in Skid Resistance. Develop and validate a generalized model for predicting minimum pavement skid resistance from measurements taken during testing season. Pennsylvania State University, University Park, Pennsylvania. HRIS 24-193042. ACTIVE

(158) Prestressed "Zero Maintenance" Pavements (Evaluations, Recommendations, and Documentations) - Study I. To develop transverse expansion joint designs able to accommodate large joint width changes associated with long prestressed slabs. Portland Cement Association, Skokie, Illinois. HRIS 24-134964 (Citations) ACTIVE

(159) Relating Pavement Distress to Serviceability and Performance. To develop relationship between pavement distress and serviceability and performance and develop a model to be used in predictive pavement design and management system Austin Research Engineers, Austin, Texas. HRIS 24-177914. ACTIVE

(160) Sand-Asphalt-Sulphur (S-A-S) Field Trial. To evaluate the performance of pavements in which sulphur acts as structuring agent between aggregates, allowing use of inferior aggregates. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 24-193121. ACTIVE

(161) Seasonal Variations in Skid Resistance. To evaluate variations in mean skid resistance over time so that measurements taken under different conditions can be adjusted to a common base. Virginia Highway and Transportation Research Council, Charlottesville, Virginia. HRIS 24-177994 (Citations) ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (162) Sensitivity Analysis of FHWA Structural Model. To determine the sensitivity of the VESYS II computer program input variables on predicted pavement serviceability and evaluate the prediction in terms of realistic performance. Austin Research Engineers, Austin, Texas. HRIS 24-048560. COMPLETE

(163) Simulation of Road Roughness Effects on Pavement Loading and Traction Forces. To examine through computer simulation the effect of roughness on tire pavement forces in driving, braking and cornering. Johns Hopkins University, Laurel, Maryland. HRIS 24-135117. ACTIVE

(164) Skid Resistance of Non-tangent Sections of Roadways. An investigation of equipment and procedures for measuring wet-pavement skid resistance on curves, acceleration and deceleration lanes, ramps, etc. Texas Transportation Institute, College Station, Texas. HRIS 24-193112. ACTIVE

(165) Small Wheel Circular Track and Variable Speed Tester. To develop devices to predetermine skid resistance in the laboratory. North Carolina Department of Transportation, Raleigh, North Carolina. HRIS 24-192958 ACTIVE

(166) Sprinkle Mixes for Skid Resistance Surfaces. To conduct an in-depth analysis of all elements used for sprinkle mix in a road pavement. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 24-135997 (Citations) COMPLETE

(167) Field Study of Pile Group Action. Experimental testing of groups of nine piles loaded to failure at 7, 28 and 60 days after driving, with tests repeated on subgroups of four and five piles. University of Houston, Houston, Texas. HRIS 25-193069 ACTIVE

(168) Analysis of the Performance of Railing Systems on Non-level Terrain. To determine variations in collision performance due to placing guardrail and median barriers on slopes, so as to establish guidelines. Texas Transportation Institute, College Station, Texas. HRIS 25-193088. ACTIVE

(169) Application of Randomec Analysis for Detecting Structural Deterioration in Bridges. To determine capabilities and limitations of the randomec method, and gain further information of the physical relationships between randomec signatures and structural behavior. Nielson Engineering and Research Incorporated, Mountain View, California. HRIS 25-153459. ACTIVE

(170) Application of Transverse Prestressing for Bridge Decks. To develop innovative techniques to utilize concept of transverse prestressing and develop detailed designs. Byrd, Tallamy, MacDonald and Lewis, Falls Church, Virginia. HRIS 25-193146. ACTIVE

(171) Assessment of Vehicle Bumper-Guardrail Interaction. To implement a detailed validation testing plan for program "guard", railing type protective roadside systems, their transitions and end designs. Texas Transportation Institute, College Station, Texas. HRIS 25-193089. ACTIVE

(172) Cost of Corrosion of Highway Structural Steel. Determine costs attributable to corrosion, estimate reductions in costs from "best practice" and newly developed technology, develop model to assess and compare systems. Business and Economic Service Institute, Lexington, Massachusetts. HRIS 25-192805. ACTIVE

(173) Design Specifications for Steel Box Girders. Based on review and comparison of current specifications, prepare comprehensive recommendations for design, workmanship and erection rules for moderate to long span girders. Wolchuk and Mayrbaurl, Consulting Engineers, New York, New York. HRIS 25-192950. ACTIVE

(174) Development of Safer Bridge Railing Designs. An investigation of several designs meeting current AASHTO specifications to determine structural and safety adequacy. Texas Transportation Institute, College Station, Texas. HRIS 25-193096. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (175) Drilled Shaft Design and Construction Guidelines Manual. To develop a practical manual of drilled shaft designs and construction guidelines. Lymon C. Reese. Austin. Texas. HRIS 25-156940. ACTIVE

(176) Earthquake Resistant Bridge Bearings. Develop designs for fixed and expansion bridge bearings to provide adequate superstructure restraint against earthquake imposed loading forces. Engineering Computer Corporation. Sacramento. California. HRIS 25-192540. ACTIVE

(177) Effective Treatments of Under and Overcrossing Structures for Bicyclists, Pedestrians and the Handicapped. Design of bridge and grade separations that will not be physical barriers or hazardous impediments to travel by these groups. DeLeuw, Cather and Company. San Francisco. California. HRIS 25-192535. ACTIVE

(178) Evaluation of Polymer Impregnation of New Bridge Decks. To evaluate field procedures for in-situ polymer impregnating a complete deck surface to a minimum of 1 1/2 inches. California Department of Transportation. Sacramento. California. HRIS 25-135333. ACTIVE

(179) Evaluation of the Performance of a Press-Lam Timber Bridge. To evaluate performance over a five-year period of the first bridge of this type. Virginia Highway and Transportation Research Council. Charlottesville. Virginia. HRIS 25-193187. (Citations) ACTIVE

(180) Fatigue of Curved Steel Bridge Elements. To establish the behavior of such elements and develop fatigue designs suitable for inclusion in AASHTO bridge specifications. Lehigh University. Bethlehem. Pennsylvania. HRIS 25-177880. ACTIVE

(181) Fracture Safe Bridge Design. To prepare a short course for fracture resistant bridge design. Lehigh University. Bethlehem. Pennsylvania. HRIS 25-156770. ACTIVE

(182) A Guide for the Investigation of Structural Failures. To prepare a guide for use in investigations of the causes of failures of civil engineering structures. ASE Incorporated. New York. New York. HRIS 25-135644. ACTIVE

(183) Guidelines for Investigation and Rehabilitation of Localized Failures in Bridge Structures. To document post mortem investigations and failure analysis of past failures and recommend preventive measures. suitable for use in a design guide book. Lehigh University. Bethlehem. Pennsylvania. HRIS 25-192020. ACTIVE

(184) Highway Bridge Seismic Design Criteria. An evaluation of existing seismic design specifications for highway bridges. Associated Transportation Center. Seattle. Washington. HRIS 25-192478. ACTIVE

(185) Ice Forces on the Yukon River Bridge - 1978 Breakup. Evaluation of the ice breakup on the Hondo Bridge. and a general study of the ice breakups. Cold Regions Research and Development. Fort Wainwright. Alaska. HRIS 25-192463. ACTIVE

(186) Impact Attenuators for Heavy Vehicles - A Feasibility Study. To determine the feasibility of developing a system for safely decelerating both compact and heavy vehicles. Southwest Research Institute. San Antonio. Texas. HRIS 25-193080. ACTIVE

(187) Improved Earth Reinforcement Techniques for Use in Cut-and-Cover Tunneling. An evaluation of the Fondedile System "Reticulated Pali Radice" and development of improved techniques based on the use of pile groups to stabilize soil masses in place. Waterways Experiment Station. Vicksburg. Mississippi. HRIS 25-135536. ACTIVE

(188) Installation of Earthquake Motion Accelerographs on Bridges. To provide maintenance and monitoring of strong ground motion instrumentation on an Interstate Interchange. University of Nevada. Reno. Nevada. HRIS 25-103036. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (189) Investigation of Highway Bridge Design Methodology for Providing Structural Resistance to Earthquakes. To evaluate existing design methodology for providing seismic resistance and develop a more rational approach for correcting deficiencies. University of California, Berkeley, California. HRIS 25-021001 ACTIVE

(190) Measurement and Prediction of Ice Forces on Bridges. Develop equipment and procedures for measuring ice forces exerted on bridge piers due to buildup and breakup of ice. Cold Regions Research and Development, Fort Wainwright, Alaska. HRIS 25-192464. ACTIVE

(191) Pasco-Kennewick Bridge Wind and Structure Motion Study. To determine characteristics and magnitudes of natural wind and bridge motion on a long-span cable-stayed bridge. Battelle Memorial Institute, Richland, Washington. HRIS 25-193220 ACTIVE

(192) Polymer Concrete Bridge Deck Overlay. To construct and evaluate a polymer concrete overlay on an existing bridge deck. Idaho Department of Transportation Boise, Idaho. HRIS 25-192686. ACTIVE

(193) Retrofit Railings for Narrow Through Truss and Other Obsolete Bridges. To develop railings for old bridges that will protect vital structural members from vehicle impacts. Southwest Research Institute, San Antonio, Texas. HRIS 25-193083. ACTIVE

(194) Segmental Polymer-Impregnated Prestressed Concrete Hollow-Core Bridge Decks. Determine feasibility of using polymer-impregnated prestressed concrete hollow-core members for a segmental bridge deck. Army Construction Engineering Research Laboratory, Champaign, Illinois. HRIS 25-192710 ACTIVE

(195) Seismic Analysis of I-80 and US-395 Interchange Structures. To determine, both theoretically and experimentally, the dynamic structural response of the interchange bridge complex. University of Nevada, Reno, Nevada. HRIS 25-048756. ACTIVE

(196) Seismic Design of Highway Bridges. To develop a training course for special bridge design workshops related to seismic design. Engineering Computer Corporation, Sacramento, California. HRIS 25-192541. ACTIVE

(197) Slurry Walls as an Integral Part of Underground Transportation Structures. To determine the advantages of using slurry walls as a permanent part of an underground structure. Chi Associates, Incorporated, Arlington, Virginia. HRIS 25-193148. ACTIVE

(198) Strong Motion Record Interpretation and Strong-Motion Installation. To develop a standardized procedure for interpretation of the records and expand bridge seismic network. Geological Survey, San Francisco, California. HRIS 25-135363. ACTIVE

(199) Techniques for Modeling and Simulating Natural Wind Turbulence for Wind Tunnel Tests of Model Bridges. To establish characteristics of two-dimensional turbulent air flow that adequately simulate natural wind conditions and modify wind tunnels to have the capability of simulating such air flow. Colorado State University Fort Collins, Colorado. HRIS 25-192585. ACTIVE

(200) Test and Evaluation of Heavy Vehicle Barrier Systems. Full scale vehicle impact testing up to 70 kips into guardrails and median barriers and an evaluation by simulation and testing of both existing and new concepts. Ultrasystems, Incorporated, Phoenix, Arizona. HRIS 25-153440. ACTIVE

(201) Wind Study, Steel Arch Bridge North of Twin Falls, Idaho. Modify and install an instrumentation system to sense bridge motion and wind components. Systems Technology Associates, Incorporated, Falls Church, Virginia. HRIS 25-177986. ACTIVE

(202) Asphalt Tanks with Solar Heating. To develop a solar heating system for asphalt storage tanks. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 31-193117. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (203) Chemical Composition and Behavior of Paving Asphalts - Part III. Study of the absorbed content of asphalts in aggregates and the effects of environmental factors on the asphalt-aggregate bond and properties and investigate molecular orientation or steric hardening. Energy Research and Development Administration. Laramie, Wyoming. HRIS 31-157096. ACTIVE

(204) Construction and Evaluation of Kennedy County Sulfur-Asphalt Test Sections. An evaluation of full-depth and width test sections using a sulfur-asphalt-sand mixture. Texas State Department of Highways and Public Transportation. HRIS 31-156933. (Citations) ACTIVE

(205) Discarded Tires in Highway Construction. Comparison of hot asphalt-vulcanized rubber seal treatment with a control section. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 31-156939 (Citations) ACTIVE

(206) Emulsified Asphalt Base Course Construction. To develop criteria for design of these courses, including testing techniques and stability criterion. Mississippi State Highway Department, Jackson, Mississippi. HRIS 31-177748. (Citations) COMPLETE

(207) Evaluation of Hot Recycled Bituminous Concrete. An evaluation of the process and performance of this hot recycling. Minnesota Department of Transportation, St. Paul, Minnesota. HRIS 31-192852. ACTIVE

(208) Evaluation of Hot Recycled Bituminous Concrete. An evaluation of the process and performance of this hot recycling. Wyoming State Highway Department, Cheyenne, Wyoming. HRIS 31-193267. ACTIVE

(209) Evaluation of Hot Recycled Bituminous Concrete. An evaluation of the process and performance of this hot recycling. Washington Department of Transportation Olympia, Washington. HRIS 31-193227. ACTIVE

(210) Evaluation of Overflex Pavement Test Section. Comparison of Overflex surface treatments using normal seal coat materials, elastomer-modified asphalt cement, elastomer-modified emulsion and amorphous polypropylene-modified asphalt cement. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 31-156945 (Citations) ACTIVE

(211) Evaluation of Rubber Asphalt Mixture used as a Stress Relieving Inner Layer. Study of a ground tire-rubber mixed with asphalt cement as a stress relieving inner layer. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 31-156047. ACTIVE

(212) Evaluation of Sprinkle Mix Construction. An evaluation of a sprinkle-treated asphalt surface course on two highways. Georgia Department of Transportation, Atlanta, Georgia. HRIS 31-192663. ACTIVE

(213) Hot-Mix Recycling of Bituminous Pavements. An evaluation of hot-mix recycling as a method of renovating cracked and deteriorated road-mix bituminous pavements. Kansas Department of Transportation, Topeka, Kansas. HRIS 31-192748 ACTIVE

(214) Recycled Bituminous Concrete - Oklahoma. To obtain information on effects of hot mix recycling on properties of asphaltic binders. Oklahoma Department of Transportation, Oklahoma City, Oklahoma. HRIS 31-193003. ACTIVE

(215) Recycling Asphalt Pavement. To study the recycling of some 6 inches of a combination of seal coats, Type D asphalt concrete pavement and lightweight asphaltic concrete, together with some additional asphalt, aggregate and additives to form an eight inch pavement on a stabilized 12 inch caliche base. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 31-177937. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (216) Recycling Asphalt Concrete Pavement. Study of an overlay with recycled pavement removed from another highway. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 31-156973. (Citations) ACTIVE

(217) Recycling of Bituminous Shoulder. Recycling of a deteriorated bituminous shoulder and used as a hot mix replacement. Minnesota Department of Transportation. St. Paul, Minnesota. HRIS 31-177745. ACTIVE

(218) Recycling Asphaltic Concrete Pavement. A study of recycling involving heating and scatifying about one inch of the existing pavement, adding a rejuvenating agent and additional hot mix material. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 31-177940. (Citations) ACTIVE

(219) Sulphur-Extended Asphalt (SEA) Field Trials. An evaluation of the performance of pavement constructed with binders in which sulphur has been used to replace some asphalt. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 31-193122 ACTIVE

(220) Alternatives to Type II Cement. A study of concrete mixtures incorporating fly ash as possible alternatives to mixtures utilizing Type II cements, considering strength, resistance to freezing and thawing and sulfates, heat of hydration and volume stability. Virginia Highway and Transportation Research Council, Charlottesville, Virginia. HRIS 32-177996 (Citations) COMPLETE

(221) Application of High Strength Concrete for Highway Bridges. To develop applications of this concrete to bridge construction. Concrete Technology Corporation, Tacoma, Washington. HRIS 32-193221. ACTIVE

(222) Assessment of Impermeability of Rigid Concrete Members. To develop a rapid test that will correlate with the long-term chloride permeability of concrete. Portland Cement Association, Skokie, Illinois. HRIS 32-177625. ACTIVE

(223) Determination of Oxygen and Moisture Levels in Structural Concrete. To develop field methods for measuring oxygen concentration and free moisture content at the level of the reinforcing steel. Southwest Research Institute, San Antonio, Texas. HRIS 32-193076 ACTIVE

(224) Development of a Device for Continuous Automatic Monitoring of Consolidation of Wet Concrete. To develop a device for monitoring concrete consolidation during compaction phase. Rexnord Incorporated, Milwaukee, Wisconsin. HRIS 32-136102 (Citations) COMPLETE

(225) Detection of Flaws in Reinforcement Steel in Prestressed Concrete Bridge Members. A review of the state-of-the-art for non-destructive inspection for detecting flaws, and develop the equipment to do the job. Southwest Research Institute, San Antonio, Texas. HRIS 32-156936. ACTIVE

(226) Development of Polymer Concrete Overlay Utilizing a Vinyl Ester Polymer. To develop a vinyl ester polymer concrete suitable for use as an overlay material. Bureau of Reclamation, Denver, Colorado. HRIS 32-153557. ACTIVE

(227) Further Investigation and Optimization of Electro-Chemical Removal of Chloride Ion from Contaminated Reinforced Concrete. A study of the long term redistribution behavior of the residual chloride and how long the passive condition created by the treatment will be sustained. Battelle Columbus Laboratory, Columbus, Ohio. HRIS 32-156719. (Citations) ACTIVE

(228) Internally Sealed Concrete for Structural Use. To investigate the properties of concrete sealed internally with the use of melted wax beads. Florida Department of Transportation, Gainesville, Florida. HRIS 32-192653. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (229) More Economical but Equally Effective Internally Sealed Concrete. To develop a lower cost material, reducing the montan wax content, reducing the melting point of the wax blend or reducing the wax volume per unit of concrete. Matrecon, Incorporated, Oakland, California. HRIS 32-192548. ACTIVE

(230) Polymer Concrete Overlay Test Program. To evaluate such properties as bond shrinkage, permeability, costs, etc., and recommend polymer overlay materials for potential success. Oregon Department of Transportation, Salem, Oregon. HRIS 32-045624 (Citations) ACTIVE

(231) Through-Transmission Acoustic Surveys for Evaluation of Tremie Concrete. To investigate the internal condition of poured Tremie concrete for curing, void zones layering and other possible defects. Holosonics, Incorporated, Richland, Washington. HRIS 32-193223 (Citations) COMPLETE

(232) Use of Super Water-Reducers in Portland Cement Concrete. To develop the technology associated with super water-reducing admixtures to permit routine use of very low water-cement ratio, air-entrained concrete. Portland Cement Association, Skokie, Illinois. HRIS 32-177629. ACTIVE

(233) Economic Evaluation of Process Control of Aggregate Gradation by Producer vs Consumer. An investigation of current highway department programs for controlling aggregate gradation. Construction Environment Incorporated, Alexandria, Virginia. HRIS 33-193149. ACTIVE

(234) Guideline Criteria for the Acceptance of "Rained On" PCC Pavements. To demonstrate the potential of the Army Corps of Engineers Abrasion Test with Dressing Wheels as an acceptance test for rained on pavements. Pennsylvania State University, University Park, Pennsylvania. HRIS 33-177899. ACTIVE

(235) Implementation of Polymer Impregnation as a Bridge Deck Sealant. To provide technical guidance in the application of polymer impregnation on some five bridges, and provide a manual of procedures and specifications. Bureau of Reclamation, Denver, Colorado. HRIS 33-134790. ACTIVE

(236) Techniques for Automatic Process Control of Aggregate Gradation. To study automatic gradation process control now in use or which could be adapted to aggregate production and use. Jaca Corporation, Fort Washington, Pennsylvania. HRIS 33-193048. ACTIVE

(237) Test for Efficiency of Mixing Recycled Asphalt Pavements. Develop methods and equipment to evaluate mixing and determine if the mix is homogeneous. University of Washington, Seattle, Washington. HRIS 33-193240. ACTIVE

(238) Tremie Concrete for Bridge Piers. An evaluation of the placeability of tremie concrete and the conditions after placing. University of California, Berkeley, California. HRIS 33-192527. ACTIVE

(239) Acoustic Emission Methods for Flaw Detection in Steel in Highway Bridges - Phase II. To develop workable acoustic emission self monitoring with source isolation capability. Battelle Memorial Institute, Richland, Washington. HRIS 34-157073. COMPLETE

(240) Corrosion Fatigue Characteristics of Bridge Steels. To develop data on corrosion fatigue characteristics in bridge steels and welded connections and weldments in hostile environments. Lehigh University, Bethlehem, Pennsylvania. HRIS 34-193018. ACTIVE

(241) Development of Rapid-Set Epoxy Adhesive for Traffic Markers. To develop an improved economical, asbestos-free, rapid setting epoxy adhesive for use in installing raised markers on pavements. Matrecon, Incorporated, Oakland, California. HRIS 34-135323. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (242) Environmental and Safety Aspects of the Use of Sulphur in Highway Pavements. To determine identities of components of fumes, dust and runoffs generated during sulphur binder and concrete formulation, pavement construction and wear. Texas Transportation Institute, College Station, Texas. HRIS 34-193099. ACTIVE

(243) Evaluation of Bridge Deck Membrane Systems and Membrane Evaluation Procedures. To identify the limitations on non-destructive tests used to evaluate effectiveness of these systems, and evaluate some thirty systems for effectiveness. Vermont Agency of Transportation, Montpelier, Vermont. HRIS 34-177963. (Citations) ACTIVE

(244) Evaluation of Low-Solvent Maintenance Coatings for Highway Structural Steel. To evaluate performance and serviceability of best available coatings, determine how much improvement can be expected and determine potential impacts on safety and health. Carnegie-Mellon Institute of Research, Pittsburgh, Pennsylvania. HRIS 34-193012. ACTIVE

(245) Evaluation of Wood Lignins as Substitutes for Asphalt. To develop binders from wood lignins or wood bark as substitutes or extenders for asphalt cement in flexible paving mixtures. University of Washington, Seattle, Washington. HRIS 34-157079. ACTIVE

(246) Field Evaluation of Thermoplastic Systems. Installation and evaluation of two thermoplastic/primer systems. New York State Department of Transportation, Albany, New York. HRIS 34-192925. ACTIVE

(247) Fracture Behavior of ASTM-A36 Bridge Steels. To determine the ability of the "H" sampling in providing desired fracture-toughness of A36 structural steel purchased to the AASHTO charpy V-Notch impact specification. Lehigh University, Bethlehem, Pennsylvania. HRIS 34-156769. ACTIVE

(248) Fused Incinerator Waste in ID-2 Bituminous Wearing Surface. An evaluation of the performance of fused incinerator waste incorporated into an experimental bituminous wearing course. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 34-156771. ACTIVE

(249) Improved Chemical Grouts for use in Cut-and-Cover and Soft-Ground Tunneling. To determine the feasibility of developing improved grouts from materials other than petroleum products, and develop test methods for laboratory use. Soletanche and Rodio Incorporated, McLean, Virginia. HRIS 34-157030. ACTIVE

(250) Improved Quality Control Procedures for Bridge Steels. Determine fracture resistance and crack arrest characteristics and develop simplified test methods for direct measurement of dynamic and static fracture energy. Lehigh University, Bethlehem, Pennsylvania. HRIS 34-193022. ACTIVE

(251) Lane Delineation with Improved Durability. To develop or modify striping materials, to obtain improved durability under all weather conditions. Southwest Research Institute, San Antonio, Texas. HRIS 34-135988. ACTIVE

(252) Low-Cost Pavement Marking Materials Based on Plasticized Sulphur. To develop a marking material based on plasticized sulphur with performance equal to or better than rapid-drying traffic paint. Southwest Research Institute, San Antonio, Texas. HRIS 34-193081. ACTIVE

(253) Material Property Requirements for Zero-Maintenance Pavements. To identify optimized sets of materials properties and corresponding range values required to eliminate pavement distress for various structural systems, travel levels and environmental conditions. Austin Research Engineers, Incorporated, Austin, Texas. HRIS 34-177916. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (254) Materials and Techniques for Improving the Engineering Properties of Sulphur. To develop sources of materials and processes to improve engineering properties of sulphur as alternates to asphalt cement and for portland cement. Southwest Research Institute, San Antonio, Texas. HRIS 34-156962. ACTIVE

(255) Measuring Rate of Corrosion of Reinforcing Steel in Concrete. To develop nondestructive instrument and methodology to measure rate of corrosion of steel in concrete slabs. National Bureau of Standards, Washington, D. C. HRIS 34-192627 ACTIVE

(256) Nontoxic Yellow Paint. To evaluate for nontoxic paint formulations in the field. Maryland Department of Transportation, Brooklandville, Maryland. HRIS 34-192790. ACTIVE

(257) Open-graded Asphalt Friction Course Lane Marking System. To develop the system with good visibility, porosity similar to open-graded asphalt friction courses and good resistance to traffic and snowplow activity. Georgia Institute of Technology, Atlanta, Georgia. HRIS 34-177581. (Citations) ACTIVE

(258) Organic Yellow Paint. Evaluation of two alkyd resin and two chlorinated rubber organic paint formulations and a 50/50 mixture of white and yellow paint. New Jersey Department of Transportation, Trenton, New Jersey. HRIS 34-192896. ACTIVE

(259) Organic Yellow Paint. Evaluation of two alkyd resin and two chlorinated rubber organic paint formulations, and a 50/50 mixture of white and yellow paint. Ohio Department of Transportation. HRIS 34-192989. ACTIVE

(260) Residual Stress Measurements in Structural Steels. Southwest Research Institute, San Antonio, Texas. HRIS 34-156975. ACTIVE

(261) Skid Resistance of Pavement Marking Materials. Determine skid resistance of materials now in use and recommend realistic minimum skid resistance for purchase and maintenance of them. Pennsylvania State University, University Park, Pennsylvania. HRIS 34-193044. ACTIVE

(262) Slip Behavior of Friction Type Joints with Coated Faying Surfaces. An evaluation of coating materials for the faying surfaces of friction type joints. University of Texas, Austin, Texas. HRIS 34-156979. ACTIVE

(263) Softening or Rejuvenating Agents for Recycled Bituminous Binders. To evaluate the composition of salvaged bituminous binders and determine rejuvenators needed to restore the binders to suitable condition for further use in pavements. Texas Transportation Institute, College Station, Texas. HRIS 34-193113. ACTIVE

(264) Standard and Tests for Acceptance of Traffic Signal Lenses. To develop standards and tests for chromaticity and light transmittance for acceptance of these lenses. Ann Arbor Testing Laboratory, Ann Arbor, Michigan. HRIS 34-156569 ACTIVE

(265) Production of Highway Construction Materials from Cellulosic and Related Waste. Investigation of techniques and economic feasibility of producing binder materials from these wastes and develop processes for their production. Suntech Incorporated, Marcus Hook, Pennsylvania. HRIS 34-156784. ACTIVE

(266) Test Methods and Use Criteria for Filter Fabrics. To identify criteria for engineering use of filter fabrics in subdrainage erosion control and soil reinforcement and evaluate existing test methods and develop needed new methods. Oregon State University, Corvallis, Oregon. HRIS 34-177877. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (267) Automation of Aggregate Sampling and Gradation Testing. To identify techniques or devices for use in aggregate sampling and gradation testing. Rexnord Incorporated, Milwaukee, Wisconsin. HRIS 35-193256. ACTIVE

(268) Ceramic Process of Wear-Resistant and Polisy-Resistant Aggregates for Pavement Surfaces. To investigate and evaluate available and potential synthetic ceramic materials and process which will provide aggregates for wear-and polish-resistant pavement surfaces. Bureau of Mines. University, Alabama. HRIS 35-192455. ACTIVE

(269) Economic and Environmental Aspects of the Use of Fused and Unfused Incinerator Aggregate in Highway Construction. A survey of municipal incinerators, and how readily the output could satisfy demand for aggregates for highway purposes, with an economic and environmental assessment. Jaca Corporation, Fort Washington, Pennsylvania. HRIS 35-193047. ACTIVE

(270) Evaluation of Fused Incinerator Residue as a Paving Material. An evaluation of fused incinerator residue as aggregate in a bituminous wearing course. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 35-193027. ACTIVE

(271) Technology for Improvement of Wear Resistance Properties of Aggregates by Materials Impregnation. To select and evaluate materials and impregnation techniques for improvement of wear resistance properties of natural aggregates. Brookhaven National Laboratory, Upton, New York. HRIS 35-177809. ACTIVE

(272) Development and Evaluation of Mechanized Equipment for Installation of the RRM Delineation System. To develop equipment for installation of recessed reflective marker delineation system and evaluate with full-field test. H. H. Aerospace Design Company, Cambridge, Massachusetts. HRIS 41-192813. ACTIVE

(273) Equipment for Heat Treating Internally Sealed Concrete -- Pyrotechnic Blankets. Develop and test a blanket system for this heat treatment and provide specifications and operating instructions. Monsanto Research Corporation, Dayton, Ohio. HRIS 41-192986. ACTIVE

(274) Equipment for Heat Treating Internally Sealed Concrete Phase. To develop the Radio-frequency Heat Treatment concept for internally sealed concrete. FRL - Albany International Company, Dedham, Massachusetts. HRIS 41-177696. (Citations) COMPLETE

(275) Equipment for Heat Treating Internally Sealed Concrete -- Trailered Heating Panels. Develop and Test a trailered electrical heater panel system and provide specifications and operating instructions. AAI Corporation, Baltimore Maryland. HRIS 41-192779. ACTIVE

(276) Equipment Improvements for Removal of Traffic Marking by High Temperature Burning. Develop and evaluate methods for removing burned residue from various pavement surfaces. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 41-193119. ACTIVE

(277) Reflector-Marker Paint Stripe Skipper Instrument. To develop a paint marker device that will automatically skip any reflector-markers installed on the pavement. California Department of Transportation, Sacramento, California. HRIS 41-153532 COMPLETE

(278) Testing of a Litter Pickup Machine. To test and determine the capabilities of a machine proposed to pickup litter. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 41-193034. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (279) Value Engineering Studies of Selected Maintenance Activities -- Snow and Ice Control (Operation). In depth studies in cooperation with other States to optimize high cost maintenance activities. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 40-135800. COMPLETE

(280) Value Engineering Studies of Selected Maintenance Activities -- Snow and Ice Control (Operations). In depth studies in cooperation with other States to optimize high cost maintenance activities. Colorado Department of Highways. Denver, Colorado. HRIS 40-134801. COMPLETE

(281) Value Engineering Studies of Selected Maintenance Activities -- Shoulder Maintenance. In depth studies in conjunction with other states to optimize high cost maintenance activities. West Virginia Department of Transportation. Charleston, West Virginia. HRIS 40-157089. ACTIVE

(282) Value Engineering Studies of Selected Maintenance Activities -- Shoulder Maintenance. In depth studies in conjunction with other States to optimize high cost maintenance activities. Iowa Department of Transportation. Ames. Iowa. HRIS 40-153713 ACTIVE

(283) Value Engineering Studies of Selected Maintenance Activities -- Shoulder Maintenance. In depth studies in conjunction with other States to optimize high cost maintenance activities. Idaho Department of Transportation, Boise, Idaho. HRIS 40-177598 COMPLETE

(284) Value Engineering Studies of Selected Maintenance Activities -- Shoulder Maintenance. In depth studies in conjunction with other States to optimize high cost maintenance activities. Arizona Department of Transportation. Phoenix, Arizona. HRIS 40-133600. COMPLETE

(285) Value Engineering Analysis of Selected Maintenance Activities -- Repair of Continuously Reinforced Concrete Pavements. In depth studies in conjunction with other States to optimize high cost maintenance activities. Texas State Department of Highways and Public Transportation. Austin, Texas. HRIS 40-156986 (Citations) ACTIVE

(286) Value Engineering Analysis of Selected Maintenance Activities -- Continuously Reinforced Concrete Pavements. In depth studies in conjunction with other States to optimize high cost maintenance activities. Mississippi State Highway Department. Jackson, Mississippi. HRIS 40-177749. (Citations) COMPLETE

(287) Value Engineering Studies of Selected Maintenance Activities - Bituminous Studies. In depth studies in conjunction with other States to optimize high cost maintenance activities. Pennsylvania Department of Transportation. Harrisburg, Pennsylvania HRIS 40-145799. COMPLETE

(288) Value Engineering Studies of Selected Maintenance Activities -- Bituminous Patching. In depth studies in conjunction with other States to optimize high cost maintenance activities. Utah Department of Transportation. Salt Lake City, Utah. HRIS 40-156998. ACTIVE

(289) Value Engineering Studies of Selected Maintenance Activities -- Bituminous Patching. In depth studies in conjunction with other States to optimize high cost maintenance activities. Oregon Department of Transportation. Salem. Oregon. HRIS 40-156756 (Citations) COMPLETE

(290) Thin Ploymer Concrete Overlays. A study of placing thin polymer concrete overlays on bridges. New York State Department of Transportation. Albany. New York. HRIS 40-192939. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (Cont)

b. (291) Rigid Pavement Repair Techniques. To develop techniques and procedures for expediting repair of concrete pavements. Utah Department of Transportation. Salt Lake City, Utah. HRIS 40-177962. ACTIVE

(292) Polymer Concrete Pavement Crack Repairs. Experimental maintenance project to patch cracks in pcc pavement. West Virginia Department of Transportation. Charleston, West Virginia. HRIS 40-193247. ACTIVE

(293) Physical Alternatives to Chemicals for Highway Deicing. To develop physical system of deicing to substitute for or minimize use of chlorides or other chemicals, and which will not adversely affect the highway or the environment. Midwest Research Institute, Kansas City, Missouri. HRIS 40-156612. ACTIVE

(294) Pavement Rehabilitation by Means other than Overlay. To determine feasibility of a variety of innovative techniques for rehabilitation of pavements without using thick overlays. Texas A&M Research Foundation, College Station, Texas. HRIS 40-156970. ACTIVE

(295) Pavement Condition Measurement Needs and Methods. To develop procedures for collecting pavement condition data from inventories for managerial decisions. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 40-156780. COMPLETE

(296) Modification of the System EARAMOR. To modify this system used to determine costs of pavement maintenance and determine economic warrants for constructing premium pavements for varying traffic characteristics and designs. CMT Incorporated, Cambridge, Massachusetts. HRIS 40-192811 ACTIVE

(297) Method to Remove Markings. To develop an improved method for removing unwanted markings without leaving a scar or trace of delineation. Southwest Research Institute, San Antonio, Texas. HRIS 40-156964. ACTIVE

(298) Method to Remove Markings. To develop an improved method for removing unwanted markings without leaving a scar or trace of delineation. Midwest Research Institute, Minnetonka, Minnesota. HRIS 40-156595. COMPLETE

(299) Method to Remove Markings. To develop an improved method for removing unwanted markings without leaving a scar or trace of delineation. AAI Corporation, Cockeysville, Maryland. HRIS 40-153757. ACTIVE

(300) Integration of Maintenance Needs into Preconstruction Process. To develop a manual for use in the preconstruction process to aid in consideration of maintenance requirements. Byrd, Tallamy, MacDonald and Lewis Falls Church, Virginia. HRIS 40-157036. COMPLETE

(301) Improving Subdrainage and Shoulders of Existing Pavements. To develop improved methods of subsurface drainage of pavement structures and the design of shoulders due for replacement for the incorporation of subdrains. University of Illinois, Urbana, Illinois HRIS 40-153680 ACTIVE

(302) Implementation of Concrete Polymer Research on Repair of Deteriorated Concrete -- Phase II. To provide assistance to States utilizing concrete polymers to repair deteriorated concrete and develop procedures for constructing thin layers of such concrete. Brookhaven National Laboratory, Upton, New York. HRIS 40-156635 ACTIVE

(303) Field Study of High Pressure Water Jet for Highway Surface Maintenance. An evaluation of this procedure, including an economic analysis. Illinois Institute of Technology, Chicago, Illinois. HRIS 40-192698 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (304) Field Evaluation of Polymer Concrete Overlays -- Idaho. Testing of a polymer concrete overlay using the Oregon technique. Idaho Department of Transportation, Boise, Idaho. HRIS 40-192684. ACTIVE

(305) Extending the Service Life of Existing Bridges by Increasing their Load Capacity. To develop innovative methods to economically and rapidly upgrade and increase load carrying capacity of geometrically inadequate and structurally unsound bridges. Byrd, Tallamy, MacDonald and Lewis, Falls Church, Virginia HRIS 40-157024 COMPLETE

(306) An Evaluation of Sprinkle Treatment Placement Techniques. An assessment of various methods for both hot and cold placement of sprinkle treatments. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 40-156948. FUTURE

(307) Evaluation of an Earth Heated Ramp. An evaluation of the construction and operation of a ramp heated by ammonia-filled pipes conducting stored earth heat energy. West Virginia Department of Highways, Charleston, West Virginia. HRIS 40-157085 ACTIVE

(308) Economic Impact of Highway Snow and Ice Control. To evaluate the performance of different deicing systems and the resulting economics, determining the major variables directly and indirectly affecting the economics. Utah Department of Transportation, Salt Lake City, Utah. HRIS 40-058381. COMPLETE

(309) Deferred Maintenance. To determine the normal maintenance schedules in roadside maintenance categories and the consequences of deviating from these schedules. Byrd, Tallamy, MacDonald and Lewis, Falls Church, Virginia. HRIS 40-157010. COMPLETE

(310) Cathodic Protection for Reinforced Concrete Bridge Decks. To construct and then monitor performance of a cathodic protection system. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 40-156929 (Citations) ACTIVE

(311) Augmentation of Earth Heating for Purposes of Roadway Deicing. The use of mathematical models to develop designs and costs on systems for augmenting earth heat by either another heat source or by conservation. Dynatherm Corporation, Cockeysville, Maryland. HRIS 40-153743 ACTIVE

(312) Alternative Highway Deicing Chemicals. To determine the technical and economic feasibility of using chemicals other than sodium or calcium chlorides without compromising the integrity or utility of the highway or adversely affecting the environment. Bjorksten Research Laboratories, Madison, Wisconsin. HRIS 40-157090 ACTIVE

(313) Evaluation of Post Mounted Delineators. Installation and evaluation of different types of these delineators at locations having a history of run-off-the-road situations. Iowa State Highway Commission, Ames, Iowa.. HRIS 51-192736. ACTIVE

(314) Evaluation of Post Mounted Delineators. Installation and evaluation of different types of these delineators at locations having a history of run-off-the-road situations. Kansas State Highway Commission, Topeka, Kansas. HRIS 51-192746 ACTIVE

(315) Evaluation of Post Delineators. Installation and evaluation of a flexible post as to maintenance costs and performance. South Dakota Department of Transportation, Pierre, South Dakota. HRIS 51-193056. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (316) Evaluation of Techniques to Counteract Truck Accidents on Steep Downgrades. To develop a cost-effective evaluation methodology applicable to truck downgrade accident reducing devices. Systems Technology, Incorporated, Hawthorne, California. HRIS 51-177539. ACTIVE

(317) Evaluation of the Effectiveness of Measures for Reducing Accidents and Accident Severity at Highway Narrow Bridges. Identify extent of the problem, develop statistical relationships, evaluate countermeasures, and develop accident reduction warrants. Southwest Research Institute, San Antonio, Texas. HRIS 51-193078 ACTIVE

(318) Field Evaluation of Delineator Posts. Installation and evaluation of different types of posts at locations having a history of run-off-the-road situations. Arkansas State Highway and Transportation Department, Little Rock, Arkansas. HRIS 51-192472 ACTIVE

(319) Field Evaluation of Delineator Posts. Installation and evaluation of different types of posts at locations having a history of run-off-the-road situations. Montana Department of Highways, Helena, Montana. HRIS 51-192873. ACTIVE

(320) Highway Simulator Specifications -- Design Study. To provide specifications for a human factors simulator to be used in traffic research activities. Systems Technology, Incorporated, Hawthorne, California. HRIS 51-153508 ACTIVE

(321) Field Installation of Mounted Delineators. Installation and evaluation of different types of posts at locations having a history of run-off-the-road situations West Virginia Department of Highways, Charleston, West Virginia. HRIS 51-193245 ACTIVE

(322) Fixed Illumination for Pedestrian Protection, Phase V. To develop a 35 mm slide and sound presentation on design procedures for special pedestrian crosswalk illumination systems. Franklin Institute, Philadelphia, Pennsylvania. HRIS 51-038941 (Citations) COMPLETE

(323) Highway Accident Research Manual and Workshop. To develop this research manual for use by researchers, practicing specialists and state highway administrators. University of North Carolina, Chapel Hill, North Carolina. HRIS 51-192974 ACTIVE

(324) Identification and Evaluation of Off-track Train Detection Systems for Grade Crossing Applications. Determine technical feasibility and cost effectiveness of off-track train detection concepts for activating crossing warning systems. GARD Incorporated, Niles, Illinois. HRIS 51-193284. ACTIVE

(325) Improving Methods for Accurate Identification of Accident Locations. To test the capabilities of the Loran-C radio navigation system for location and documentation of highway events, features and elements. Tennessee Department of Transportation, Nashville, Tennessee. HRIS 51-156926. ACTIVE

(326) Improvement of Highway Safety Improvement Programming Procedures. Organization of Safety Review Team and study of highway safety needs and provide a measure of effectivness of the probabilistic hazard index model. Mississippi State Highway Department, Jackson, Mississippi. HRIS 51-177750 (Citations) COMPLETE

(327) Laboratory Evaluation of Existing Breakaway Structures. An evaluation of existing breakaway sign and luminaire supports, to improve performance. ENSCO, Incorporated, Springfield, Virginia. HRIS 51-157040. (Citations) ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (328) Analysis of Accident Data and Hours of Service of Interstate Commercial Motor Vehicle Drivers. To establish the relationship, if any, between commercial vehicle accidents and hours of service or work by interstate commercial drivers. Genasys Corporation, Rockville, Maryland. HRIS 51-177678 ACTIVE

(329) Analysis of Urban Arterial Road and Street Accident Experience. To determine the general dimensions, specific characteristics of, and appropriate countermeasures for these accidents. Goodell-Grivas, Incorporated, Southfield, Michigan. HRIS 51-192831. ACTIVE

(330) Assessment of Probability of Injury in the Analysis and Testing of Barrier Concepts. To develop an improved method of predicting injury of occupants due to an impact with a barrier. ENSCO, Incorporated, Springfield, Virginia. HRIS 51-157004 (Citations) ACTIVE

(331) Bridge Rail Retrofit for Curved Structures. To conduct full-scale impact tests on tubular, collapsing beams and shaped concrete barriers for retrofit bridge railing designs. Southwest Research Institute, San Antonio, Texas. HRIS 51-193075 ACTIVE

(332) Constant Warning Time Devices for Use at Railroad Grade Crossings. To improve the reliability, service life, costs, power requirements and maintenance for these devices. Systems Technology Laboratories, Arlington, Virginia. HRIS 51-193281 ACTIVE

(333) Data for Development of Incident Detection Algorithms. To use real-time system data from a Los Angeles freeway to test and validate incident detection algorithms. California Department of Transportation, Sacramento, California. HRIS 51-048601 COMPLETE

(334) Determination of the Operational Performance Requirements for a Roadside Accident Countermeasure System. Use of accident data and encroachment information to identify hazardous locations, evaluate protection needed and select countermeasures. Southwest Research Institute, San Antonio, Texas. HRIS 51-193077. ACTIVE

(335) Development and Testing of Incident Detection Algorithms. Develop and evaluate incident detection algorithms using forecasting, time series and pattern recognition approaches. Technology Service Corporation, Santa Monica, California. HRIS 51-048612 COMPLETE

(336) Development of Procedures for Identifying Hazardous Locations. To develop and verify procedures for highway facilities, other than freeways, to identify hazardous locations using methods other than accident records. Pennsylvania State University, University Park, Pennsylvania. HRIS 51-048614 COMPLETE

(337) Development of Safer Barriers for Construction Sites. To develop new portable barriers and end treatments for use at construction sites to provide protection for motoring public and construction workers. Texas Transportation Institute, College Station, Texas. HRIS 51-193095 ACTIVE

(338) Effectiveness of Alternative Skid Reduction Measures. To develop relationships between pavement skid number and wet-weather accidents for a variety of conditions and traffic and the cost effectiveness of alternative solutions to the problem of maintaining frictional requirements during wet weather. Midwest Research Institute, Kansas City, Missouri. HRIS 51-045297. ACTIVE

(339) Effectiveness of Freeway Lighting. To evaluate the safety impact of reduced or newly installed freeway lighting. Mark Battle Associates, Washington, D.C. HRIS 51-153609. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (cont)

b. (340) Effects of Environmental Transitions on Highway Tunnel Operations and Safety. To determine parameters of tunnel approach and transition zones which influence motorist performance and comfort and develop criteria for visibility, noise and physical and environmental design in these zones. Franklin Institute Philadelphia, Pennsylvania. HRIS 51-058342 (Citations) ACTIVE

(341) Estimating the Safety Benefits for Alternative Highway Geometric and/or Operational Improvements. To evaluate highway safety design improvements by an analysis of accident records and develop an estimating procedure for implementing new improvements. Alabama State Highway Department, Montgomery, Alabama. HRIS 51-153414 ACTIVE

(342) Evaluation of Interstate Route 80 Emergency Reporting System. To determine the effectiveness of two-way telephone emergency reporting system as compared with a system installed on I-287. New Jersey Department of Transportation, Trenton, New Jersey. HRIS 51-156631 ACTIVE

(343) Evaluation of Post Mounted Delineators. To install and evaluate different post systems at locations having a history of run-off-the-road situations. Connecticut Department of Transportation, Wethersfield, Connecticut. HRIS 51-192588 ACTIVE

(344) Evaluation of Post Mounted Delineators. To install and evaluate different post systems at locations having a history of run-off-the-road situations. Idaho Department of Transportation, Boise, Idaho. HRIS 51-192683 ACTIVE

(345) Evaluation of Post Mounted Delineators. To install and evaluate different post systems at locations having a history of run-off-the-road situations. Illinois Department of Transportation, Springfield, Illinois. HRIS 51-192695 ACTIVE

(346) Model Pedestrian Safety Program. To combine experience gained through previous research and develop a model program to guide local officials in increasing pedestrian safety. Biotechnology, Incorporated, Falls Church, Virginia. HRIS 51-157046 (Citations) COMPLETE

(347) Study of Causative Factors in Rural Pedestrian Accidents. To collect data in factors involved, determine countermeasures, and evaluate effectiveness of selected countermeasures, Biotechnology, Incorporated, Falls Church, Virginia. HRIS 51-045111 (Citations) ACTIVE

(348) Test and Evaluation of Self-Restoring Guardrails. Full-scale crash testing and evaluation of a guardrail previously developed. Southwest Research Institute, San Antonio, Texas. HRIS 51-193085. ACTIVE

(349) Training Course on Highway Safety Improvement Programming. To develop a training course for effective implementation of roadside safety improvement programming. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 51-156984. (Citations) COMPLETE

(350) Urban Intersection Improvement for Pedestrian Safety. To identify the problems, develop and evaluate several countermeasures, and evaluate a school-pedestrian crossing design. Biotechnology, Incorporated, Falls Church, Virginia. HRIS 51-055611 (Citations) COMPLETE

(351) Z Exposure Measures for Highway Accidents. Determine and identify sources of data collection techniques to measure exposure for various highway geometric and/or traffic conditions. Highway Safety Research Institute, Ann Arbor, Michigan. HRIS 51-192847 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (352) Safety Aspects of Using Vehicle Hazard Warning Lights. An investigation of the present use of these lights, and determine safety benefits as well as legal and operational problems. Biotechnology, Incorporated, Falls Church Virginia. HRIS 51-177967 ACTIVE

(353) Safety Evaluation of Priority Techniques for High Occupancy Vehicles. Analysis of the accidents to high occupancy vehicles given priority treatment. Beiswenger Hoch and Associates, Miami, Florida. HRIS 51-153651. ACTIVE

(354) School Trip Safety and Play Areas. To develop criteria to complement established standards relative to school protection devices, develop strategies for pedestrian school bus trips, and develop criteria for establishment of play streets. Biotechnology, Incorporated, Falls Church, Virginia. HRIS 51-045095 (Citations) COMPLETE

(355) Motorists Attitudes towards Large Trucks. Identify attitudes towards large trucks and their situational context and relate the presence of these attitudes to motorist behavior. Lawrence Johnson and Associates, Incorporated, Washington, D.C. HRIS 52-192635 ACTIVE

(356) Human Factors Requirements for Real-Time Motorist Information Displays. To improve motorist information displays to increase efficiency of traffic movement. Texas Transportation Institute, College Station, Texas. HRIS 52-048988 ACTIVE

(357) Call-In Systems for Motorist Navigation Information. To determine the feasibility of a computer-controlled voice response system for such information. I/O Computer Services, Cambridge, Massachusetts HRIS 52-192814 ACTIVE

(358) Carbon Monoxide and other Toxic Gases in Commercial Truck Cabs. To determine the concentration of potentially harmful emission pollutants in cabs of heavy-duty diesel trucks and assess effects on driver health and performance. Science Applications, Incorporated, Los Angeles, California. HRIS 52-153470. ACTIVE

(359) Validation of Truck Handling Simulation Results. Design and conduct validation tests on simulation programs for handling and stability. Texas Transportation Institute, College Station, Texas. HRIS 52-193115. ACTIVE

(360) Vehicle Operation, Fuel Consumption and Emissions as Related to Highway Design and Operation. To determine relationships between highway design and operation characteristics of vehicles and develop procedures for impact analysis of fuel consumption and emissions. Planning Environment International, McLean, Virginia. HRIS 52-157068 INACTIVE

(361) Wheel Force Transducer. Develop a transducer to measure dynamic forces of truck wheels in three axes, and prepare a user's manual. Maritime Dynamics, Incorporated, Fullerton, California. HRIS 53-192547 ACTIVE

(362) Reduction of Adverse Aerodynamic Effects of Large Trucks. To develop methods of minimizing three aerodynamic-related phenomena: vehicle-induced disturbances, splash and spray. Systems Technology, Incorporated, Hawthorne, California. HRIS 53-153531 ACTIVE

(363) Significant Factors in Truck Ride Quality. Identify factors contributing to differences in ride quality in cabs, such as vibration, noise, temperature and air quality. Systems Technology, Incorporated, Hawthorne, California. HRIS 53-192563 ACTIVE

(364) Simulation of Cargo Shifting Effects on Vehicle Handling. Determine by computer simulation how dynamic cargo shifting affects stability of articulated trucks. Johns Hopkins University, Laurel, Maryland. HRIS 53-158760 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (365) Simulation of Effects of Increased Truck Size and Weight. A program to simulate the dynamic response of tractor-trailers in single, double and triple combinations during braking, cornering, lane changing and combinations thereof. Highway Safety Research Institute, Ann Arbor, Michigan. HRIS 53-177738 ACTIVE

(366) Intercity Bus Integrity. To explore methods by which the structural integrity of in-use buses can be assessed. Johns Hopkins University, Laurel, Maryland. HRIS 53-193787 ACTIVE

(367) Analysis of Feasibility and Design Configurations for In-vehicle Route Guidance. A feasibility study of development of a route guidance system. Sperry Rand Corporation, Great Neck, New York. HRIS 53-192946 ACTIVE

(368) Assessment of Vehicle Bumper-Guardrail Interaction -- Phase I and III. To validate program "Guard's" predictive capability for effect of bumper design on collision performance. Chiapette, Welch and Associates, Palos Hills, Illinois. HRIS 53-192687 ACTIVE

(369) Effect of Cargo Shifting on Vehicle Handling. Full-scale testing dynamic cargo shifting effects on stability of articulated trucks, particularly in the case of liquid cargo and hanging meat hauling. Ultrasystems, Incorporated, Irvine, California. HRIS 53-153489. ACTIVE

(370) Effect of Truck Size and Weight on Accident Experience and Traffic Operations. Analysis of accident data to determine effect of size and weight on accident incidence and severity and on traffic operations. Biotechnology, Incorporated, Falls Church, Virginia. HRIS 53-136035. ACTIVE

(371) The Effects of Truck Size on Driver Behavior. To define car-truck interactions that produce unsafe changes in driver behavior, and provide remedial techniques. Institute for Research, College, Pennsylvania. HRIS 53-156764 ACTIVE

(372) Eye Height Determination of Motor Vehicles. To determine the eye height distribution of passenger car drivers and the eye distribution of and field of vision for various categories of trucks on U. S. roads. Urban Behavioral Research Associates, Incorporated, St. Louis, Missouri. HRIS 53-156607 ACTIVE

(373) An Evaluation of the Chevron Symbol Sign. To evaluate the benefits from use of the "chevron" sign in addition to large arrow signs at sharp alignment changes in the travel direction. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 54-177889 ACTIVE

(374) Criteria for Removing Traffic Signals. To develop the criteria justifying removal of traffic signals, based on surveys of some 30 entities. JHK and Associates, Alexandria, Virginia. HRIS 54-193156 ACTIVE

(375) Determination of Traffic Signal Intensity Levels. To determine driver and pedestrian requirements for conspicuity, detection and recognition of standard signals in terms of color, contrast, size and position. KLD Associates, Incorporated, Huntington Station, New York. HRIS 54-192908 ACTIVE

(376) Construction Zone Delineation -- Raised Traffic Markers. Evaluation of these markers as a means of controlling traffic through construction zones. Arkansas State Highway Department, Little Rock, Arkansas. HRIS 54-153443. COMPLETE

(377) Construction Zone Delineation -- Raised Pavement Markers. Evaluation of these markers as a means of controlling traffic through construction zones. Massachusetts Department of Transportation, Boston, Massachusetts. HRIS 54-153767 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (378) Construction Zone Delineation (Raised Traffic Markers). Evaluation of these markers as a means of controlling traffic through construction zones. Mississippi State Highway Department, Jackson, Mississippi. HRIS 54-177751. ACTIVE

(379) Construction Zone Delineation -- Raised Pavement Markers. Evaluation of these markers as a means of controlling traffic through construction zones. North Carolina Department of Transportation, Raleigh, North Carolina. HRIS 54-156698 ACTIVE

(380) Construction Zone Delineation -- Raised Pavement Markers. Evaluation of these markers as a means of controlling traffic through construction zones. Oregon Department of Transportation,Salem, Oregon. HRIS 54-156745 (Citations) COMPLETE

(381) Construction Zone Delineation -- Raised Pavement Markers. To evaluate the use of these markers as a means of providing improved delineation through construction zones. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 54-156789 COMPLETE

(382) Construction Zone Delineation -- Raised Pavement Markers. Evaluation of these markers as a means of controlling traffic through construction zones. Washington State Department of Transportation, Olympia, Washington. HRIS 54-157076 (Citations) COMPLETE

(383) Control Strategies in Response to Freeway Incidences. To develop ramp control strategies when freeway incidents occur. Orinco Corporation, La Jolla, California. HRIS 54-192552 ACTIVE

(384) Design and Analysis for Bus and Truck Road Systems in Urban Areas and Restrictions on Truck Traffic. Engineering and economic evaluation of selected bus and truck oriented measures to reduce traffic congestion in urban areas. Wilbur Smith and Associates, New Haven, Connecticut. HRIS 54-108531. (Citations) ACTIVE

(385) Design and Operating Speed for Construction Zones. To determine best ways to design for reasonable speeds or ways to reduce speed where necessary. Midwest Research Institute, Kansas City, Missouri. HRIS 54-156603. ACTIVE

(386) Detection and Communications for Traffic Systems. To develop and fabricate self powered vehicle detector prototype sensors. Naval Surface Weapons Center, Silver Spring, Maryland. HRIS 54-153745 ACTIVE

(387) Development of an Arterial Analysis Package. To assemble a series of computer programs to analyze operation of arterial facilities and determine optimal control measures. University of Florida, Gainesville, Florida. HRIS 54-192660 ACTIVE

(388) Distributed Computer Systems for Traffic Control. To develop optimal control strategies for urban traffic signal setting when the traffic system is controlled by a distributed set of computers rather than by a centralized computer. University of Minnesota, Minneapolis, Minnesota. HRIS 54-058492. ACTIVE

(389) Dynamic Visual and Auditory Displays for Metropolitan Traffic Management. Design of guidelines for use of dynamic visual displays and evaluate and verify proposed guidelines for highway advisory radio. Texas Transportation Institute, College Station, Texas. HRIS 54-193097 ACTIVE

(390) Evaluate Highway Advisory Radio in a Surveillance and Control System. To evaluate the HAR system in a surveillance and control network and evaluate motorist acceptance. Minnesota Department of Transportation, St. Paul, Minnesota. HRIS 54-192851 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (391) Evaluation of Carpool and Bus Traffic Operational Incentives. Develop procedures for assessing effects of traffic operational improvements developed as incentives to use carpools and buses instead of private vehicles. JHK and Associates, Alexandria, Virginia. HRIS 54-136041. ACTIVE

(392) Evaluation of Carpool Use of a Bypass Bus Ramp. To evaluate the effectiveness of permitting carpools of three or more persons to use an exclusive bus lane. Minnesota Department of Transportation, St. Paul, Minnesota. HRIS 54-135474 COMPLETE

(393) Evaluation of Raised Snowplowable Markers for Centerline Delineation. To determine the feasibility of using raised pavement markers in pavement grooves as guidance aids during nightime inclement weather conditions. Virginia Highway and Transportation Research Council, Charlottesville, Virginia. HRIS 54-177993 (Citations) ACTIVE

(394) Evaluation of Retro-Reflective Measurement Instruments. To evaluate instruments capable of measuring the retro reflectivity of highway traffic stripes under daylight conditions. Mobility Systems and Equipment Company, Los Angeles, California. HRIS 54-192550. ACTIVE

(395) An Evaluation of the Potential Safety Problems with Symbol Signs. Determine the potential problems attendent with the use of symbol signing amongst the elderly and other driver groups and their safety implications. Systems Technology, Incorporated, Hawthorne, California. HRIS 54-192561 ACTIVE

(396) Feasibility of Detecting Icy Pavements from Traffic Flow Data. To construct algorithms employing measurable traffic flow and meteorological parameters to detect an icy bridge when the adjacent pavement is ice free. Technology Service Corporation, Santa Monica, California. HRIS 54-153502 COMPLETE

(397) Feasibility of Distributed Multilevel Traffic Control Systems. To determine if and where this system is cost-beneficial and if it is compatible with UTCS control strategies. Alan M. Voorhees and Associates, McLean, Virginia. HRIS 54-193142 ACTIVE

(398) Field Evaluation of Selected Delineator Treatments. Study of the effectiveness of conventional and novel delineation treatments on traffic performance and accident potential. Alan M. Voorhees and Associates, McLean, Virginia. HRIS 54-136046 COMPLETE

(399) Traffic Engineering Improvements for Safety. Studies on speed control through school zones and preparation of guidelines for use of effective traffic control devices. Transportation Systems Center, Cambridge, Massachusetts. HRIS 54-153789. ACTIVE

(400) Traffic Priority Systems for Urban Fleets. Evaluation of priority systems for bus, truck and other fleet vehicles and their impact on traffic flow in urban areas. Transportation Systems Center, Cambridge, Massachusetts, HRIS 54-177703 ACTIVE

(401) Railroad Passive Sign Experimental Design. An evaluation of accident reduction safety benefits of advance warning signs at grade crossings. University of Wisconsin, Madison, Wisconsin. HRIS 54-193282 ACTIVE

(402) Raised Pavement Markers at Hazardous Locations. Evaluation of the effect of these markers as a means of improving safety and traffic operations at high hazard locations. Georgia Department of Transportation, Forest Park, Georgia. HRIS 54-192665 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (403) Raised Pavement Markers and High Hazard Locations. Evaluation of such markers as a means of providing improved roadway delineation and added safety. Kentucky Department of Transportation, Lexington, Kentucky. HRIS 54-177666 ACTIVE

(404) Requisite Number of Signal Timing Plans for UTCS IGC Control Systems. To develop a procedure for determination of the required number of such plans. Alan M. Voorhees and Associates, McLean, Virginia. HRIS 54-193219 ACTIVE

(405) Right-Turn-On-Red. Study of past performance of RTOR and develop guidelines for evaluating intersections for applicability of RTOR. Alan M. Voorhees and Associates, McLean, Virginia. HRIS 54-048606 COMPLETE

(406) Roadside Delineators. To recommend a system of post mounted delineators that will provide adequate guidance under a variety of conditions of environment, geometrics of the highway and speed of traffic. Safety Sciences Limited, Chicago, Illinois. HRIS 54-192711 ACTIVE

(407) Safety Aspects of Vehicle Parking. Determination of and comparison of alternatives as regards operation and safety of various on street parking arrangements. University of Tennessee. Knoxville, Tennessee. HRIS 54-156928 ACTIVE

(408) Safety Features of Stop Signs at Rail-Highway Grade Crossings. To study advantages and disadvantages of the use or non-use of stop signs at grade crossings. Biotechnology, Incorporated, Falls Church, Virginia. HRIS 54-157057 ACTIVE

(409) San Antonio Diversion System Support. To provide technical support for the system and operate variable message signs. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 54-193120 ACTIVE

(410) Self Powered Vehicle Detector. To develop and build a prototype, self-powered detector. Naval Surface Weapons Center, Silver Spring, Maryland. HRIS 54-192801 ACTIVE

(411) Signing and Delineation for Special Usage Lanes. To determine information needed by both users and nonusers of such lanes and to develop signing and delineation systems to assure compliance with the intended usage of the lanes. Biotechnology, Incorporated, Falls Church, Virginia. HRIS 54-177969 ACTIVE

(412) Signing for Low Volume Intersections. To develop criteria for use of two-way stop signs, yield signs or no signs at such intersections. Texas Transportation Institute, College Station, Texas. HRIS 54-193111 ACTIVE

(413) Speed Control on High Speed Roadways. Evaluation of pavement marking and delineation systems as potentially safe and effective means for controlling speeds on high speed highways. Urbitran Associates, Incorporated, New York, New York. HRIS 54-192949. ACTIVE

(414) Speed Control Study on School Zones. To install seven new school signs systems and collect traffic data under the new conditions. Mississippi State Highway Department, Jackson, Mississippi. HRIS 54-156587 COMPLETE

(415) Speed Control Study in School Zones. Study of speed zone traffic control devices in school zones. San Diego County, San Diego, California. HRIS 54-153537 COMPLETE

(416) A Study of Speed Advisory Information Systems for Reduced Visibility Conditions. To develop preliminary design specifications for this system that would inform drivers of optimum speed during reduced visibility periods. Oregon Dept. of Transportation, Salem, Oregon. HRIS 54-038244 (Citations) ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (417) Fringe Parking Lots for Carpoolers. To develop guidelines for implementing such parking facilities. Alan M. Voorhees, and Associates, McLean, Virginia. HRIS 54-193217 ACTIVE

(418) Gore Area Delineation. A study of gore delineation, its problems, and available materials, and recommendations for changes in standards for applications. Pennsylvania Department of Transportation, Harrisburg, Pennsylvania. HRIS 54-135780 COMPLETE

(419) Grade Crossing Active Advance Warning Signals. To identify types of crossings with active devices where active advance warning signals would improve safety, and develop prototype devices. JGM Associates, Stanford, California. HRIS 54-194539 ACTIVE

(420) Guidelines for Flashing Traffic Control Devices. To develop guidelines for five classes of flashing traffic control devices, including both actuated and non-actuated equipment. KLD Associates, Incorporated, Huntington Station, New York. HRIS 54-055701 ACTIVE

(421) Guidelines for the Application of Arrow Boards in Work Zones. To develop these guidelines with respect to the conditions under which they should be used and where they should be placed in the zone to provide for safe and efficient traffic movement. Midwest Research Institute, Kansas City, Missouri. HRIS 54-192866 ACTIVE

(422) Handbook of Roadway Delineation. To develop a handbook to assist the practicing engineer in determining the system appropriate for a particular situation. JHK and Associates, San Francisco, California. HRIS 54-192542. ACTIVE

(423) Highway Advisory Radio in the Philadelphia Area. To develop and demonstrate the five systems implemented in the area. Delaware Valley Regional Planning Commission, Philadelphia, Pennsylvania. HRIS 54-156766 COMPLETE

(424) Identification of Traffic Management Problems in Work Zones. To identify and define problems associated with traffic movement through work zones. University of Tennessee, Knoxville, Tennessee. HRIS 54-193060 ACTIVE

(425) Improved Software for Computerized Urban Traffic Control Systems. To develop improved filtering and prediction algorithms that can be implemented in a microprocessor. University of Maryland, College Park, Maryland. HRIS 54-153741 (Citations) COMPLETE

(426) Improving the Traffic Operations and Safety of Ramps and Speed Change Lanes. To develop cost-effective procedures and design criteria for ramps and speed change lanes. M. Baker, Jr., Incorporated, Beaver, Pennsylvania. HRIS 54-193011. ACTIVE

(427) Installation of UTCS First Generation FORTRAN Software in the Charlotte Traffic Control System. A pilot study to demonstrate under real life conditions the adaptability of the current first generation FORTRAN software. DeLeuw, Cather and Company, Chicago, Illinois. HRIS 54-193068 ACTIVE

(428) Integrated Signal Timing Design Package. To integrate into a single package three signal timing programs. University of Florida, Tallahassee, Florida. HRIS 54-153649. COMPLETE

(429) Intersection Signal Control to Improve Traffic Operations and Reduce Accidents. To develop guidelines for uniform amber clearance interval, all red clearance interval, flashing mode periods, and turning movements. TJKM, Walnut Creek, California. HRIS 54-136191. COMPLETE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (430) Low Profile Markers for Wet/Night Visibility. Study of aluminized-backed and lucite-backed, low profile markers for traffic lanes, as to installation and maintenance techniques and problems, including snowplowing and salting. Colorado Department of Highways, Denver, Colorado. HRIS 54-134792 (Citations) COMPLETE

(431) Adaptions of a Freeway Simulation Model for Studying Incident Detection and Control. To develop a generalized microscopic freeway and frontage road simulation model to evaluate proposed incident detection techniques. KLD Associates, New York, New York. HRIS 54-048986 ACTIVE

(432) Application of Existing Strategies to Arterial Signal Control. To assess the benefits of arterial signal timing system alternatives and develop functional specifications for those systems exhibiting the highest effectiveness. Alan M. Voorhees, and Associates, McLean, Virginia. HRIS 54-193140 ACTIVE

(433) Carpool/Bus Reversible Arterial Lane on the Kalanianaole Highway, Honolulu. To document the costs and effects of this lane. Alan M. Voorhees and Associates, McLean, Virginia. HRIS 54-153662 ACTIVE

(434) Carpool Bypass Lane on the Moanalua Freeway in Honolulu. To document the costs and operational effects of this bypass lane. Alan M. Voorhees, and Associates, McLean, Virginia. HRIS 54-153661 ACTIVE

(435) Communications Tradeoff Analysis for Computerized Traffic Control. To reduce communication costs of computerized traffic control systems. Sperry Rand Corporation, Great Neck, New York. HRIS 54-192897 ACTIVE

(436) Computer Controlled Traffic Signals Diamond Interchange. To develop and evaluate computer hardware and software for controlling a diamond interchange. California Department of Transportation, Sacramento, California. HRIS 54-082647 ACTIVE

(437) Conduct of a Speed Control Study in Small Communities. Evaluation of several speed control signing systems on approach to small communities. Mississippi State Highway Department, Jackson, Mississippi. HRIS 54-156577. COMPLETE

(438) Low Profile Markers for Wet/Night Visibility. Study of aluminized-backed and lucite-backed, low profile markers for traffic lanes, as to installation and maintenance techniques and problems, including snowplowing and salting. North Carolina Department of Transportation, Raleigh, North Carolina. HRIS 54-135673 ACTIVE

(439) Low Profile Markers for Wet/Night Visibility. Study of aluminized-backed and lucite-backed, low profile markers as to installation and maintenance procedures and problems. Ohio Department of Transportation, Columbus, Ohio. HRIS 54-058134 COMPLETE

(440) Low Profile Markers for Wet/Night Visibility. To evaluate how well aluminized-backed and lucite-backed markers withstand effects of snowplowing, sand and salt applications, freeze/thaw cycles, studded tires and lane changing by vehicles. Washington State Department of Transportation, Olympia, Washington. HRIS 54-058190 COMPLETE

(441) Motorist Aid Citizen Radio Service (CB) as a Wide Area Communication System. To develop and test an automatic telephone interconnect device which can be used in conjunction with a CB radio link for motorist emergencies and assistance. Georgia Institute of Technology, Atlanta, Georgia. HRIS 54-192669 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (442) Motorist Information and Diversion System (MIDS) - Literature Review and Research and Evaluation Plans. To document current state-of-the-art and develop plans for further research and evaluation. Chi Associates. Arlington, Virginia. HRIS 54-153625 INACTIVE

(443) Motorist Needs for Directional Signing and Services Information on Interstate and Federal-aid Primary Highways. To develop a conceptual basis for various types of facilities and services as components of such information systems. KLD Associates, Incorporated. Huntington Station, New York. HRIS 54-177822 ACTIVE

(444) No Passing Zone Treatments for Special Geometric and Traffic Operations Situations. To Develop warrants, criteria and signs and markings for these situations. Texas Transportation Institute. College Station, Texas. HRIS 54-193106 ACTIVE

(445) Operation Problems on Cloverleaf Interchanges. To determine the safety and operational problems associated with weave areas, loop ramps and terminal areas of these interchanges and potential countermeasures to alleviate the problems. Institute for Research, State College, Pennsylvania HRIS 54-156779 ACTIVE

(446) Optimization Techniques for Urban Transportation Systems. To produce a computer program capable of optimizing signals and lane assignments in a corridor. Massachusetts Institute of Technology. Cambridge, Massachusetts. HRIS 54-153778 ACTIVE

(447) Passing and No-Passing Zones - Signs, Markings and Warrants. To develop and evaluate improved criteria for these zones, traffic control devices and warrants for urban and rural two-lane highways. Texas A&M Research Foundation. College Station, Texas. HRIS 54-156968 ACTIVE

(448) Planning and Scheduling Work Zone Traffic Control. An analysis of the interrelationships of traffic control strategy and construction activity with respect to project and public impact and develop a guide for use in early planning. JHK and Associates, San Francisco, California. HRIS 54-192543 ACTIVE

(449) Prediction Methodology for Urban Traffic Control. To investigate requirements for and methods of predicting traffic variables in "realtime" traffic control systems. Transportation Systems Center, Cambridge, Massachusetts. HRIS 54-153781 ACTIVE

(450) Preferential Lanes for High Occupancy Vehicles in the Banfield Freeway in Portland, Oregon. To measure traffic flow, transit and carpool usage, safety and air quality effects from the bus/carpool lane. Oregon Department of Transportation, Portland, Oregon. HRIS 54-156754 (Citations) ACTIVE

(451) Procedures and Guidelines for Rehabilitation of Existing Freeway-Arterial Highway Interchange. To develop evaluation procedures and design guidelines for improving existing interchanges with operational and/or safety problems. Midwest Research Institute, Kansas City, Missouri. HRIS 54-177764 ACTIVE

(452) Questionnaire and Interview Form Design Related to Traffic Control Devices. To design forms for study of driver interpretation and opinion of and reaction, behavior and attitude toward traffic control devices. Urban Behavioral Research Associates, Incorporated, St. Louis, Missouri. HRIS 54-156613 ACTIVE

(453) Study of Effectiveness of Reduced Visibility Guidance Techniques. An evaluation of the effectiveness of various systems and operating strategies for guiding motorists in reduced visibility conditions, as well as the most economically feasible approach to specific conditions. Sperry Rand Corporation, Great Neck, New York. HRIS 54-156688 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (454) Systems Analysis and Design Guidelines for Highway Advisory Radio. Mathematical modeling of HAR systems design guidelines and field testing of HAR sites. Atlantic Research Corporation, Alexandria, Virginia. HRIS 54-193144 ACTIVE

(455) Test and Evaluate Wide Area Detector Breadboard. To verify the wide area detector breadboard concept and look at practical applications of the system. Jet Propulsion Laboratory, Pasadena, California HRIS 54-192545 ACTIVE

(456) Traffic Control Devices Handbook - An Operating Guide, Part IV - Supplement. To develop the guide for best practices for safe traffic controls as applied to construction, maintenance and utility work activities. Roy Jorgensen and Associates, Gaithersburg, Maryland. HRIS 54-192803 ACTIVE

(457) Traffic Controls in Construction and Maintenance Work Sites. A field test of a report on the subject in a publication of the American Public Works Association. Maryland Department of Transportation, Baltimore, Maryland. HRIS 54-192791 ACTIVE

(458) Macroscopic Simulation for Traffic Management. To develop a simulation model of urban area traffic flow useful in pretesting and evaluating traffic management strategies. KLD Associates, Incorporated, Huntington Station, New York. HRIS 55-177821 ACTIVE

(459) Magnetic Gradient Vehicle Detector (MGVD) Evaluation. A comparison of the MGVD transducer/pulse mode with inductive loop detector. New York State Department of Transportation, Albany, New York. HRIS 55-192933 ACTIVE

(460) Quality of Flow on Urban Arterials. To update the section of the Highway Capacity Manual dealing with flow quality and capacity of urban arterials. Alan M. Voorhees and Associates, Incorporated, McLean, Virginia. HRIS 55-178003 COMPLETE

(461) Urban Traffic Counting. To field test and evaluate an urban traffic counting procedure. Iowa Department of Transportation, Ames, Iowa. HRIS 55-177644 ACTIVE

(462) Urban Traffic Simulation Implementation. To apply the Urban Traffic Simulation Model to typical traffic engineering problems. California Department of Transportation, Sacramento, California. HRIS 55-082672 ACTIVE

(463) Weigh-in-Motion Instrumentation. An automated system utilizing a highway bridge to monitor truck type, time, headway distribution, speed, lane occupancy, gross weight, axle weights and spacings, and dynamic loads for vehicles over 10,000 pounds. Case Western Reserve University, Cleveland, Ohio. HRIS 55-156726 ACTIVE

(464) Rhode Island Statewide Truck Travel: Base Year and Forecast Year Estimates. To establish a method for forecasting future magnitude and pattern of truck travel based on current patterns. Rhode Island Statewide Planning Program, Providence, Rhode Island. HRIS 55-177906 (Citations) COMPLETE

(465) Freeway Capacity Analysis Procedures. Develop improved capacity analysis techniques for uninterrupted flow, weaving areas, ramp terminals, using existing research. Polytechnic Institute of New York, Brooklyn, New York. HRIS 55-177837 (Citations) ACTIVE

(466) Freeway Modification to Increase Traffic Flow. To develop a state-of-the-practice report based on synthesis of before and after conditions resulting from modifications of freeway surface geometrics. Texas State Department of Highways and Public Transportation, Austin, Texas. HRIS 55-177934 (Citations) ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (467) Implementation and Evaluation of Fringe Parking Facilities for Carpool Staging at Various Locations in Los Angeles and San Francisco/Oakland Bay Areas. To evaluate a concept aimed at increasing vehicle occupancy improving air quality and conserving energy. California Department of Transportation, Sacramento, California. HRIS 55-153511 ACTIVE

(468) Implications of Light Weight, Low-Powered Future Vehicles in the Traffic Stream. To determine the impact of such vehicles on traffic flow, roadway capacity and service level each year through 1985, with estimates for 1995. Midwest Research Institute, Kansas City, Missouri. HRIS 55-192867 ACTIVE

(469) Integrated Traffic Simulation Model - Phase I. To develop this model for representing traffic in most urban traffic facilities with optimum efficiency. KLD Associates, Incorporated, Huntington Station, New York. HRIS 55-156667 ACTIVE

(470) Determination of Origin-Destination Matrices from Link Volumes and Turning Movements. To develop a software package to estimate the O/D matrix of a given network with the volume and turning movements of all links known. John Hamburg and Associates, Chicago, Illinois. HRIS 55-192689 ACTIVE

(471) Evaluation of PAT DAW-209 Model Weighing-in-Motion System. An evaluation of this system and perfect the installation, operation and maintenance practices necessary for accurate and reliable operation. Idaho Department of Transportation, Boise, Idaho. HRIS 55-192682 ACTIVE

(472) Evaluation of Preferential Lanes for High Occupancy Vehicles at Metered On-Ramps. Evaluation of a concept of increasing vehicle occupancy, improving air quality and conserving energy. California Department of Transportation, Sacramento, California. HRIS 55-153498 ACTIVE

(473) Evaluation of Urban Travel Estimation Procedures. To test previously developed procedures for sampling program to measure total vehicle-miles travel by regions or in subareas of a region, and by functional classes of facilities. Georgia Department of Transportation, Forest Park, Georgia. HRIS 55-177575 ACTIVE

(474) Acoustic Sensing System for Mapping Soil-Rock Interface and Detecting and Identifying Objects and Material Changes under Water Table. To provide portable sensing system to locate boulders, irregularities of grouted soils, utility lines, buried structures, foundations and map soil/rock interfaces. ENSCO, Incorporated, Springfield, Virginia. HRIS 61-193150 ACTIVE

(475) Airborne Resistivity Techniques for Locating Construction Material. Testing these techniques to find buried sand and gravel deposits. Earth Satellite Corporation, Washington, D. C. HRIS 61-153599 COMPLETE

(476) Borehole Radar Rehabilitation and System Integration. To rehabilitate antennas for underground radar system and update to operate with acoustic system. ENSCO, Incorporated, Springfield, Virginia. HRIS 61-193151 ACTIVE

(477) Determination of Consistency Characteristics. To develop methods for measuring a parameter indicative of soil's response to moisture changes and its performance in earth structures and pavement foundations. ITT Research Institute, Chicago, Illinois. HRIS 61-134948 ACTIVE

(478) Development of New Concepts for Processing of Geophysical Data for Tunneling Design. To utilize technology transfer from other disciplines for processing electromagnetic cross hole and reflection data. University of California, Livermore, California. HRIS 61-192546. ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (479) Evaluation of French Pressuremeter. An evaluation of this device as to procedures, its applicability to geotechnical engineering, and deriving soils parameters. Massachusetts Institute of Technology, Cambridge, Massachusetts. HRIS 61-192819 ACTIVE

(480) Evaluation of Geotechniques Piezometer Probe. To determine if this device can be used to measure ground water tables, pore water pressure, permeability and soil consistency, density and type. Mississippi State Highway Department, Jackson, Mississippi. HRIS 61-177747 ACTIVE

(481) Fabrication and Research Evaluation of a New Combination Sensing System to Determine Ground Conditions Tunnel Design and Construction. To produce a prototype multiple sensor borehole probe system capable of obtaining information on relevant tunnel design and construction. Southwest Research Institute, San Antonio, Texas. HRIS 61-193079. ACTIVE

(482) Fabrication of an Inductive Resistivity Probe for Site Exploration. To develop and test a prototype geophysical inductive probe compatible with the proble being developed by the Southwest Research Institute. Westinghouse Electric Corporation, Annapolis, Maryland. HRIS 61-192804 ACTIVE

(483) Field Research Experiment for New Site Exploration Techniques: Acoustic Pulse-Echo and Through-Transmission Surveys. To develop acoustical surveying as a viable method for geologic prediction. Holosonics, Incorporated, Richland, Washington. HRIS 61-193222. (Citations) COMPLETE

(484) Forest Glen Field Research Experiment. To evaluate new site investigation techniques, EBSCO, Incorporated, Springfield, Virginia. HRIS 61-177974 (Citations) COMPLETE

(485) Handbook on Earth Resistivity. To develop a handbook on methods presently used to detect subsurface voids. Environmental Exploration, Morgantown, West Virginia. HRIS 61-193242 ACTIVE

(486) Remote Sensing with Ground-Probing Radar, Phase II -- Multiple Borehole Techniques. To develop economical and technically improved real-time predictive techniques for investigation, interpretation and definition of geological conditions prior to subsurface excavation projects. ENSCO, Incorporated, Springfield, Virginia. HRIS 61-177975 COMPLETE

(487) Representative Ground Parameters for Structural Analysis of Tunnels. Evaluate the accuracy, sensitivity and reliability of site exploration information required for tunnel design and construction. Delon Hampton and Associates, Silver Spring, Maryland. HRIS 61-153632 ACTIVE

(488) Users Manual for Soil Stabilization in Pavement Structures. To describe the design and construction methods of various stabilized systems and their comparative costs, including lime, fly-ash, cement and bituminous, and combinations thereof. Terrel, Epps, and Associates, Seattle, Washington. HRIS 62-193224 ACTIVE

(489) Users' Manual -- Coal Mine Refuse in Highway Embankments. To develop a manual describing how to design and construct highway embankments with coal mine refuse. L. Robert Kimball and Associates, Ebensburg, Pennsylvania. HRIS 62-193049 ACTIVE

(490) State of Stress in Soils - Evaluation of French Self-boring Pressuremeter. To evaluate this device in California soils and compare results with classical soil sampling methods. California Department of Transportation, Sacramento, California. HRIS 62-153538 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (491) Lock and Dam 26. To load a 2x4 group of timber pile to ultimate axial capacity, measuring load transfer and settlement. Army Corps of Engineers, St. Louis, Missouri. HRIS 62-192864 ACTIVE

(492) Investigation of the Use of Coal Refuse-Flyash Compositions as Highway Base Course Materials. To determine the potential for combining these materials as a strong, durable, and economical base course material. GAI Consultants, Incorporated, Monroeville, Pennsylvania. HRIS 62-193017 ACTIVE

(493) Improved Design and Control of Grouting in Soils. To develop improved measures to assure satisfactory grout treatment of soils. Hayward Baker Company, Odenton, Maryland. HRIS 62-192783 ACTIVE

(494) Effective Stress Axial Capacity Cooperative. Laboratory and field load tests on instrumented model piles to evaluate a new analysis and design concept. Amoco Production Company, Chicago, Illinois. HRIS 62-193001 ACTIVE

(495) Development of Methodology for Design and Construction of Compacted Shale Embankments. Identify factors responsible for rapid deterioration of shales and develop evaluation techniques for stability of existing embankments, remedial treatments and design criteria and construction control techniques. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 62-192860 ACTIVE

(496) Chemical Compaction Aids for Fine-grained Soils. Literature survey, laboratory evaluations and field experiments of promising chemical compaction aids. Iowa State University, Ames, Iowa. HRIS 62-045301 COMPLETE

(497) Determination of Mechanical Properties of Rock at Forest Glen Experiment. Demonstrate feasibility of a method of measuring state-of-stress and mechanical properties of rock for tunneling and underground construction. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 63-177757 ACTIVE

(498) Dynamic Testing of Slotted Underdrain Plastic Pipe. Study of dynamic wheel loads ranging from 9 to 50 kips at speeds up to 40 mph on three types of this pipe under varying depths and types of backfill. Waterways Experiment Station Vicksburg, Mississippi. HRIS 63-156579. ACTIVE

(499) Full-Scale Field Tests to Evaluate Frost Action Predictive Techniques. To validate analytical and laboratory techniques for prediction of frost heave by means of laboratory and controlled field tests. Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. HRIS 63-192883 ACTIVE

(500) Ground Water Quality. To develop methods to dispose of surface drainage through infiltration. Geological Survey, Washington, D. C. HRIS 63-192657 ACTIVE

(501) Groundwater Control in Tunneling. Study of systems for control of groundwater during construction of tunnels, and systems to control intrusion into completed tunnels. Goldberg, Zoino, Dunnclif, Newton Upper Falls, Massachusetts. HRIS 63-192812 ACTIVE

(502) High Resolution Sensing Techniques for the Study of Landslide Potential. To define discontinuities and inhomogeneities in soil/mass influencing slope stability and the techniques for measuring influences for stability analysis. National Bureau of Standards, Boulder, Colorado. HRIS 63-153565 ACTIVE

(503) Identification of Tunnel Vulnerability to Earthquakes. Evaluation of Tunnel performance under strong seismic motion and recommend disaster mitigating designs. National Science Foundation, Washington, D.C. HRIS 63-192633 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (504) In Situ Testing and Borehole Stemming for the Forest Glen Research Experiment. To provide necessary engineering services and specialized equipment for this project Construction Environment, Alexandria, Virginia. HRIS 63-177071 ACTIVE

(505) Measurement of In-situ Stress with a Thin Bladed Vane Device. To determine the technical and economic feasibility of this device to measure stress in a soil mass. Soil Systems, Incorporated, Marietta, Georgia. HRIS 63-153658 ACTIVE

(506) Measuring and Testing Techniques for the Determination of In-situ Stress in Soil Masses. To produce improved and more reliable devices for measuring state of stress in natural soil masses. Foundation Sciences, Incorporated, Portland, Oregon. HRIS 63-156750 ACTIVE

(507) Methodology for Prediction and Minimization of Detrimental Volume Changes of Expansive Clays in Highway Subgrades. Study of the design, construction and maintenance of highways on expansive clays and shales. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 63-082283 ACTIVE

(508) Monitoring Soil-Structure Interaction in a Colorado Tunnel, Second Bore. To determine movement and stress data on soil, rock and tunnel lining before, during and after construction and integrate this data with engineering information on earlier bores, so as to predict best tunneling methods and lining loads. Bureau of Reclamation, Denver, Colorado. HRIS 63-134793 ACTIVE

(509) Sensing Systems for Measuring Mechanical Properties in Ground Masses. To assimilate all available information for soft ground site exploration devices not widely used for tunneling and underground construction. Soil Systems Incorporated, Marietta, Georgia. HRIS 63-177593 ACTIVE

(510) Sensing Systems for Measuring Mechanical Properties in Ground Masses. An evaluation of the use of the Menard pressuremeter to provide design parameters in soil and soft rock. Soil Test Services, Northbrook, Illinois. HRIS 63-192716 (Citations) ACTIVE

(511) Tunnel Strong Motion Instrumentation. To provide information for use in evaluating seismic safety of underground structures, particularly tunnels. California Department of Conservation, Sacramento, California. HRIS 63-192482 ACTIVE

(512) Development of a Mathematical Model to Correlate Observed Frost Heave of Highway and Airport Pavements with Laboratory Predictions. To develop this model in terms of physical, environmental and climatic factors. Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. HRIS 64-135563 ACTIVE

(513) Enforcement Requirements for High Occupancy Vehicle Facilities. Determine these requirements for freeway and street operations providing preferential treatment to such vehicles . Beiswenger, Hoch and Associates, Miami Beach, Florida. HRIS 70-153644 ACTIVE

(514) World Survey of Current Research and Development on Roadsand Road Transport. An annual inventory of R&D activities in some 60 to 70 countries, plus in-depth studies as requested by FHWA. International Road Federation, Washington, D.C. HRIS 90-082045 ACTIVE

(515) Microcomputer Technology. To transfer microcomputer technology to industrial and governmental operations, including transportation associated problems. Luzerne County Community College, Nanticoke, Pennsylvania. HRIS 90-156777 ACTIVE

1. FEDERAL HIGHWAY ADMINISTRATION (contd)

b. (516) Measurement and Analysis of Resuspended Roadway Dust in Texas. To characterize the resuspension of roadway dust and its area of impact on ambient air quality. Texas Transportation Institute. College Station. Texas. HRIS 90-156963 (Citations) ACTIVE

(517) Conference on Simulation in Solving Transportation Problems. To inform researchers of the latest techniques in simulation. University of Michigan Ann Arbor, Michigan. HRIS 90-156617 ACTIVE

2. NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM: Transportation Research Board, 2101 Constitution Avenue, N. W., Washington, D.C. 20418

(1) Social, Economic, Environmental Consequences of Not Constructing a Transportation Facility. To strengthen techniques for the evaluation of ground transportation facility alternatives. David A. Crane and Partners, Boston, Massachusetts. HRIS 11-099480. (Citations) ACTIVE

(2) Travel Estimation Procedures for Quick Response to Urban Policy Issues. To provide a guide manual of travel estimation techniques having quick response capabilities. Comsis Corporation, Silver Spring, Maryland. HRIS 11-135118. (Citations) COMPLETE

(3) Techniques for Evaluating Options in Statewide Transportation Planning Programming. To provide transportation planning policy-sensitive methodologies allowing evaluation of options that would produce timely results for decision-making. Alan M. Voorhees and Associates, McLean, Virginia, and Systems Design Concepts, Incorporated, Washington, D. C. HRIS 11-136065 (Citations) COMPLETE

(4) Guidelines for Public Transportation Levels of Service and Evaluation. To determine the relationship between public transportation service, the urban environment and user segments, and develop guidelines for evaluating alternative systems. University of Tennessee, Knoxville, Tennessee HRIS 11-135832 ACTIVE

(5) Toward Environmental Benefit/Cost Analysis: Energy Flow Analysis (Manual). To develop a user-oriented manual to assist in conducting environmental analyses using the energy-flow concept. Cornell University, Ithaca, New York. HRIS 11-156691 COMPLETE

(6) The Benefits of Separating Pedestrians and Vehicles. To identify and quantify these benefits and develop techniques for relating these benefits to evaluations of separation proposals. SRI International, Arlington, Virginia. HRIS 12-099473 COMPLETE

(7) Dissaggregate Travel Demand Models. To develop operational travel demand forecasting models consistent with travel choice behavior of households or individual travelers. Charles River Associates, Incorporated, Boston, Massachusetts HRIS 12-099479 (Citations) COMPLETE

(8) New Approaches to Understanding Travel Behavior: Phase II. To incorporate key elements of the new approach into present travel demand forecasting. Charles River Associates, Incorporated, Boston, Massachusetts. HRIS 13-099474 (Citations) ACTIVE

(9) Statewide Freight Demand Forecasting Procedures. Evaluation of alternative procedures for this forecasting with emphasis on statewide transportation planning. Cambridge Systematics, Cambridge, Massachusetts. HRIS 13-193279 ACTIVE

2. NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (contd)

(10) Transportation Financing within the Context of Energy Constraints. To determine the impacts of energy conservation policies and proposals on state transportation financing. Systems Design Concepts, Incorporated, Washington, D.C. HRIS 14-193286 ACTIVE

(11) Economic Impacts of Transportation Policies and Programs. To estimate immediate economic effects of facility construction and short and long term economic growth generated by the facility. Regional Science Research Institute, Amherst, Massachusetts. HRIS 15-177903 ACTIVE

(12) Toward Environmental Benefit/Cost Analysis Energy-Flow Analysis (Study Design). To develop a study design for research that will provide evaluations of the application of the energy-flow methodology to transportation planning. Cannon Group, Incorporated, Tallahassee, Florida. HRIS 15-153653 COMPLETE

(13) Towards Environmental Benefit/Cost Analysis: Measurement Methodology. To describe programs of research underway or completed using energy-flow concept to measure impacts of man-made changes in ecosystems. Cornell University, Ithica, New York. HRIS 15-135659 (Citations) COMPLETE

(14) Socioeconomic Consequences of Right-of-Way Acquisition-Induced Resident Relocation. To identify and use variables in predicting dislocation consequences of alternate route and design proposals and identify legislative or regulatory constraints to assure equity to the displaces. RMC Research Corporation, Bethesda, Maryland. HRIS 15-110672 (Citations) COMPLETE

(15) Guidelines for Use of Vanpools and Carpools as a Transportation System Management Technique. To identify effective policies and their impacts to encourage vanpooling and carpooling use based on an understanding of individual and household preferences and behavior. George Washington University Washington, D. C. HRIS 16-193285 ACTIVE

(16) Energy and Transportation Systems. To establish energy factors for construction materials, and processes, maintenance processes, transportation systems operations and develop procedures for evaluating transportation systems in terms of energy use. California Department of Transportation, Sacramento, California. HRIS 17-138382 COMPLETE

(17) Monitoring Carbon Monoxide Concentration in Urban Areas. To determine sampling procedures that will allow CO to be monitored less than one full year and still meet federal standards using meteorological data and existing CO monitoring data. Technology Service Corporation, Santa Monica, California. HRIS 17-153521 COMPLETE

(18) Fuel Supply Limitation and Passenger Travel. To assist decision-makers to incorporate fuel supply limitations in passenger transportation planning, alternatives evaluation and policy development. Charles River Associates, Incorporated, Boston, Massachusetts. HRIS 17-193288 ACTIVE

(19) Guidelines for Safety Criteria for Low Traffic Volume Roads. To develop a comprehensive bibliography relating to low volume highways. John C. Glennon, Overland Park, Kansas. HRIS 21-192747 ACTIVE

(20) A Policy on Geometric Design of Highways and Streets. Technical review, editing, illustrating this publication, including effects and cost of metrication. John F. Holman Company, Washington, D.C. HRIS 21-178065 ACTIVE

2. NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (contd)

(21) Multiple Service Level Highway Bridge Railings -- Performance and Design Criteria. To identify and document realistic performance criteria and correlated design criteria for bridge railing systems providing various levels of service. Southwest Research Institute, San Antonio, Texas. HRIS 21-156961 COMPLETE

(22) Investigation of Selected Noise Barrier Acoustical Parameters. Analysis and evaluation of cross sectional shape of barriers, surface characteristics, and influence on ground cover effect. Pennsylvania State University, University Park, Pennsylvania. HRIS 21-156801 (Citations) ACTIVE

(23) Ecological Effects of Highway Fills on Wetlands. Study the effects of fills on wetlands classes, summarizing the cause and effect relationships between construction, structures, maintenance and operations and ecosystem changes. University of Massachusetts, Amherst, Massachusetts. HRIS 21-153770 (Citations) ACTIVE

(24) Determine the Luminous Requirements for Retroreflective Highway Signing. To define the upper and lower limits of luminosity for retroreflective road signs. Highway Safety Research Institute, Ann Arbor, Michigan. HRIS 21-095101 COMPLETE

(25) Buried Plastic Pipe for Drainage of Transportation Facilities. To develop and evaluate design, installation and performance criteria for the use of buried plastic pipe products. Simpson, Gumpertz and Heger Incorporated, Cambridge, Massachusetts. HRIS 22-083022 (Citations) ACTIVE

(26) Requirements for Wear-Resistant and Skid-Reistant Highway Pavement Surfaces. To identify and evaluate systems to result in improved pavement surfaces and the correction of worn or polished surfaces. Woodward-Clyde Consultants, San Francisco, California. HRIS 24-082685 (Citations) COMPLETE

(27) Development of Pavement Structural Subsystems. To develop and verify structural subsystems for flexible type pavements which, by utilizing mechanistic techniques, can be used to analyze and predict distress modes. Woodward-Clyde Consultants, San Francisco, California. HRIS 24-083811 (Citations) ACTIVE

(28) Improved Pavement - Shoulder Joint Design. A study of performance of the joint between sholder and pavement and relate it to climate, support, pavement/shoulder design, traffic, drainage and sealing materials and techniques. Georgia Institute of Technology, Atlanta, Georgia. HRIS 24-102086 COMPLETE

(29) Bayesian Analysis Methodology for Verifying Recommendations to Minimize Asphalt Pavement Distress. To verify the recommendations made earlier regarding methods for minimizing premature cracking in asphalt pavements. Woodward-Clyde Consultants, San Francisco, California. HRIS 24-135307 ACTIVE

(30) Calibration and Correlation of Response-Type Road Roughness Measuring Systems. To develop and verify a relatively rapid and inexpensive method for calibrating and correlation of these systems. Highway Safety Research Institute, Ann Arbor, Michigan. HRIS 24-177723 ACTIVE

(31) Development of a System for Nationwide Evaluation of Portland Cement Concrete Pavements. To develop a system for state and nationwide evaluation of pcc pavements. University of Illinois, Urbana, Illinois. HRIS 24-178066 ACTIVE

2. NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (contd)

(32) Development of a Simplified Pavement Management System. To prepare a synthesis report on PMS R&D and develop a simplified PMS for assisting in rehabilitation programming of existing pavements. Austin Research Engineers Incorporated, Austin, Texas. HRIS 24-193067 ACTIVE

(33) Acceptance Criteria for Electroslag Weldments in Bridges. To develop and verify acceptance criteria for use of electroslag butt welds in bridges. United States Steel Corporation, Monroeville, Pennsylvania. HRIS 25-083242 (Citations) COMPLETE

(34) Analysis and Design of Bridge Bents. An investigation of bent caps concealed in straight, continuous, reinforced concrete bridges. Portland Cement Association, Skokie, Illinois. HRIS 25-102799 (Citations) COMPLETE

(35) Synthesis of the Narrow Bridge Problem. In-depth study of nature and extent of the problem, the range and types of associated hazards and improvement methods. Texas A&M Research Foundation, College Station, Texas. HRIS 25-103015 (Citations) COMPLETE

(36) Field Evaluation of Galvanic Cathodic Protection for Reinforced Concrete Bridge Decks. Field evaluation of the effectiveness of zinc anode galvanic systems applied to the surface of a bridge deck exhibiting active reinforcing steel corrosion. Portland Cement Association, Skokie, Illinois. HRIS 25-134951 ACTIVE

(37) Retrofitting Procedures for Fatigue-Damaged Full-scale Welded Bridge Beams. Study of retrofitting or repair of fatigue damaged bridge members. Lehigh University, Bethlehem, Pennsylvania. HRIS 25-156787 (Citations) ACTIVE

(38) Development of an Integrated Bridge Design System. To develop an integrated, modular bridge design system encompassing current bridge design specifications and allowing a wide range of interaction with the computer in performing design functions. Multisystems Incorporated, Cambridge, Massachusetts. HRIS 25-193289 ACTIVE

(39) Predicting Moisture-Induced Damage to Asphaltic Concrete, Field Evaluation Phase. To verify previously developed test system in a 6-year field study for predicting susceptibility of asphaltic concrete to moisture damage. University of Idaho, Moscow, Idaho. HRIS 31-134890 (Citations) COMPLETE

(40) Influence of Asphalt Temperature Susceptibility on Pavement Construction and Performance. Determine the range of variability in temperature susceptibility, evaluate the effects of the variability, identify the limits that can be accomodated, and determine procedures for accomodating or controlling the variability. Texas A&M Research Foundation College Station, Texas. HRIS 31-193292 ACTIVE

(41) Influence of Bridge Deck Repairs on Corrosion of Reinforcing Steel. A study of the effectiveness of various repair techniques as related to subsequent corrosion of the reinforcing steel. Battelle Columbus Laboratories, Columbus, Ohio. HRIS 32-082403 (Citations) COMPLETE

(42) Erosion Control During Construction: Phase II. To assess the erosion potential, evaluate the effectiveness of control measures and develop procedures to match necessary protective measures to the erosion potential. Utah State University, Logan, Utah. HRIS 33-104656. (Citations) ACTIVE

(43) Fatigue Behavior of Full-Scale Welded Bridge Attachments. To examine the fatigue strength of beams with web and flange attachment plates, and examine influence of lateral bracing members. Lehigh University, Bethlehem, Pennsylvania. HRIS 33-177879 ACTIVE

2. NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (contd)

(44) Polymer Concrete in Highway Bridge Decks. To clarify the state of knowledge with regard to polymer concrete in bridge decks. Lehigh University, Bethlehem, Pennsylvania. HRIS 33-193290. ACTIVE

(45) Preformed Elastormeric Joint Sealing Systems - Field Evaluation Phase. To evaluate the adequacy of the tentative guide specifications for sealing joints in concrete pavements developed in an earlier NCHRP project. Utah Department of Transportation, Salt Lake City, Utah. HRIS 34-105124 (Citations) COMPLETE

(46) Waterproofing Membrane for Protection of Concrete Bridge Decks. To develop one or more effective waterproofing membrane systems. Woodward-Clyde Consultants, San Francisco, California. HRIS 34-105020 (Citations) COMPLETE

(47) Development of a Performance Specification for Bridge Deck Joint-Sealing Systems. To formulate a performance specification for prefabricated, surface-mounted bridge deck joint sealing system based on performance of systems now in use. Howard, Needles, Tammen and Bergendoff, Fairfield, New Jersey. HRIS 34-156628 COMPLETE

(48) Temporary Pavement Marking System. Southwest Research Institute, San Antonio, Texas. HRIS 34-156981 (Citations) COMPLETE

(49) Guidelines for Recycling Pavement Materials. To develop these guidelines with consideration of various recycling techniques, equipment needs, environmental effects, energy conservation, additives, etc. Texas A&M Research Foundation, College Station, Texas. HRIS 34-156954 (Citations) ACTIVE

(50) Temporary Pavement Marking Paint Systems. To examine new materials and procedures and analyze feasibility in comparison with existing systems. Georgia Institute of Technology, Atlanta, Georgia. HRIS 34-177580 ACTIVE

(51) Use of Polymers in Highway Concrete. Update state-of-the-art, evaluate new developments, recommend future direction of R&D. Lehigh University, Bethlehem, Pennsylvania. HRIS 34-177883 COMPLETE

(52) Locating Voids Beneath Pavement using Pulsed Electromagnetic Wave Techniques. To determine the practicality of these techniques for locating voids under pavements up to 18 inches thick. Georgia Institute of Technology Atlanta, Georgia. HRIS 34-193287 ACTIVE

(53) Upgrading of Poor or Marginal Aggregates for PCC and Bituminous Pavements. To advance methods of upgrading poor or marginal materials to acceptable levels for use in paving mixtures, using coatings, chemical treatments and impregnation, but not mechanical means. Pennsylvania State University, University Park, Pennsylvania. HRIS 35-156797 (Citations) ACTIVE

(54) Acceptance of Aggregates used in Bituminous Paving Mixtures. An evaluation of presently used methods for acceptance or rejection of aggregates. Texas Transportation Institute, College Station, Texas. HRIS 35-177929 ACTIVE

(55) Evaluation of Repair Techniques for Damaged Steel Bridge Members. Identify common types of accidental damage and their frequency and analyze present practice and equipment used to assess and repair the damage. Battelle Columbus Laboratories, Columbus, Ohio. HRIS 40-138477 ACTIVE

(56) Cathodic Protection of Concrete Bridge Structures. Develop and evaluate one or more cathodic protection systems to control corrosion and prepare a state-of-the-art report on methods, materials and criteria used to control corrosion in other than the top portion of decks. Corrosion Engineering and Research Company, Concord, California. HRIS 40-177518 (Citations) ACTIVE

2. NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (contd)

(57) Maintenance Level of Service Guidelines. To develop and test a general methodology for establishing objective levels of service for use by maintenance managers at all levels for establishing priorities, allocating resources, etc. Woodward-Clyde Consultanta, San Francisco, California. HRIS 40-177544 (Citations) ACTIVE

(58) Bridges on Secondary Highways and Local Roads, Rehabilitation and Replacement. To develop a rational, cost-effective methodology for selection between rehabilitation or replacement. University of Virginia, Charlottesville, Virginia. HRIS 40-178002 ACTIVE

(59) Coating Systems for Painting Old and New Structural Steel. Preparation of guidelines for use of existing and newly developed nonproprietary coating systems, considering health and environment, exposure conditions, application requirements and economics. Georgia Institute of Technology, Atlanta, Georgia. HRIS 40-177579 ACTIVE

(60) Evaluation of Damage and Methods of Repair for Prestressed Concrete Bridge Members. To provide guidance for assessment of damage to prestressed members and identify, develop and evaluate effectiveness of repair and replacement techniques. George O. Shanfelt, Olympia, Washington. HRIS 40-193291 ACTIVE

(61) Cost and Safety Effectiveness of Highway Design Elements. To identify and quantify the key geometric characteristics of road design having a bearing on safety, identify the options and measure the cost effectivness of options. Roy Jorgensen and Associates, Gaithersburg, Maryland. HRIS 51-135108 COMPLETE

(62) Wet-Weather Skidding Accident Reduction at Intersections. A study of the relationships between wet and dry pavement tractive demand, conflicts and accidents and develop procedures to evaluate wet-weather skidding accident potential. Ohio Department of Highways, Columbus, Ohio. HRIS 51-135718 ACTIVE

(63) Application of Traffic Conflicts Analysis at Intersections. To develop a procedure for collecting and using conflicts data to diagnose safety and operational deficiencies and evaluate effectiveness of improvements. Midwest Research Institute, Kansas City, Missouri. HRIS 51-177763 ACTIVE

(64) Review of Vehicle Weight/Horsepower Ratio as Related to Passing-Lane Design Criteria. To evaluate current practice with regard to the design vehicle used, consider continuation or modification of current practice and prepare tables, charts, etc., for AASHTO consideration during revision of the geometric design publications. Pennsylvania State University, University Park, Pennsylvania. HRIS 53-156802 COMPLETE

(65) Evaluation of Winter-Driving Traction Aids. A study of the various traction aids for passenger cars and light trucks to be used during the winter driving season, such as chains, snow tires, studded tires, etc. Pennsylvania Transportation Institute, University Park, Pennsylvania. HRIS 53-082501 (Citations) COMPLETE

(66) Guidelines for Uniformity in Traffic Control Signal Design Configurations. To prepare guidelines for optimum traffic control signal design configurations at intersections and mid-block crossings. KLD Associates, Incorporated, Huntington, New York. HRIS 54-108025 (Citations) COMPLETE

(67) The Institutional Aspects of Implementing Congestion-Reducing Techniques. To identify common institutional barriers to implementing traffic congestion reduction measures and recommend strategies for overcoming these barriers. Remak/Rosenbloom, Santa Barbara, California HRIS 54-156956 (Citations) COMPLETE

2. NATIONAL COOPERATIVE HIGHWAY RESEARCH PROJECT (contd)

(68) Guidelines for Selecting Traffic Signal Control at Individual Intersections. To develop guidelines for selecting the most appropriate type of traffic signal control for individual rural or urban intersections. Alan M. Voorhees and Associates, McLean, Virginia. HRIS 54-157026 ACTIVE

(69) Summary of all Freeway Surveillance, Communication and Control Experience. To prepare such a summary for freeway operations as a synthesis of past and present practice. Alan M. Voorhees and Associates, McLean, Virginia HRIS 54-157063 ACTIVE

(70) Variable Message Signs. A review of previous and current applications of such signs to determine relevant characteristics. Texas Transportation Institute, College Station, Texas, HRIS 54-193116 ACTIVE

(71) Evaluation of Traffic Controls for Street and Highway Work Zones. To determine the effectiveness of selected work-zone traffic control devices andhow they should be designed and used for stationary work zones. Biotechnology, Incorporated. Falls Church, Virginia. HRIS 54-177968 ACTIVE

(72) Guidelines for Design and Operation of Ramp Control Systems. To develop an analytical procedure and guidelines for comparative evaluation of alternative ramp control system designs. Texas Transportation Institute, College Station, Texas. HRIS 54-177930 ACTIVE

(73) Methodology for Performance Evaluation of Signalized Network Control Strategies. To develop methodology for comparative performance evaluation of alternative traffic control strategies for signalized street networks of ten or more signalized intersections. Computeran Systems Corporation, Hackensack, New Jersey. HRIS 54-177779 ACTIVE

(74) Development of an Improved Highway Capacity Manual. To start work on an improved highway capacity manual, with existing information assembled to create an interim improved manual. JHK and Associates, Alexandria, Virginia. HRIS 55-177976 ACTIVE

(75) The Relationship of Changes in Urban Highway Supply to Vehicle-Miles of Travel. To determine the effect on travel of new facilities, capacity increases, priority treatment of certain classes of vehicles, etc. Cambridge Systematics, Incorporated, Cambridge, Massachusetts. HRIS 55-153784 ACTIVE

(76) Improved Methods for Vehicle Counting and Determining Vehicle-Miles of Travel. To develop improved cost effective procedures for conducting highway vehicle counting programs and determining vehicle-miles of travel (VMT). John Hamburg and Associates, Bethesda, Maryland. HRIS 55-177680 ACTIVE

(77) Manual on Subsurface Investigations. To prepare a final draft revision of the 1967 AASHTO Manual on Subsurface Investigations. Haley and Aldrich Incorporated, Cambridge, Massachusetts. HRIS 61-193295 ACTIVE

(78) Instrumentation for Moisture Measurement -- Bases, Subgrades and Earth Materials (Sensor Evaluation). To conduct a field evaluation study of moisture sensors of both dielectric capacitance and nuclear magnetic resonance types developed under previous NCHRP Projects: Southwest Research Institute San Antonio, Texas. HRIS 63-082544 (Citations) ACTIVE

(79) State Laws and Regulations on Truck Size, Weight and Speed. Compilation and comparison of State laws as to uniformity and the effects upon carriers of the non-uniformities in interstate movements. R. J. Hansen Associates, Rockville, Maryland. HRIS 70-153758 (Citations) COMPLETE

2. NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (contd)

(80) Right-of-Way and Legal Problems Arising out of State and Federal-aid Highway Programs. Study of operating practices and legal elements of special problems involving right-of-way acquisitions and control and highway laws in general. Transportation Research Board, Washington, D.C. HRIS 70-192629 ACTIVE

(81) Longitudinal Occupancy of Freeways by Utilities. To determine the feasibility, need and merit for permitting trunkline and transmission type utilities to be installed longitudinally within rights-of-way of Interstate and other freeways. Byrd, Tallamy, MacDonald and Lewis, Falls Church, Virginia. HRIS 90-157041 COMPLETE

(82) Synthesis of Existing Information Related to Highway Problems. To prepare syntheses of previously researched problems so as to combine existing knowledge in a single publication. Transportation Research Board, Washington, D.C. HRIS 90-111332 ACTIVE

3. DEPARTMENT OF TRANSPORTATION (OTHER THAN THE FEDERAL HIGHWAY ADMINISTRATION)

(1) Mass Transit Systems Study. A study of energy requirements, air pollution and traffic congestion in cooperation with the Environmental Protection Agency and others as related to mass transit systems. Urban Mass Transportation Administration, Washington, D. C. HRIS 11-136145 ACTIVE

(2) Technology Exchange for Surface Transit. To develop a program for technology exchange in the field of priority for surface transit. Office of the Secretary, Washington, D. C. HRIS 11-059003 ACTIVE

(3) Impacts of Changes to Truck Size, Configuration and Weight Limits. An assessment of the freight market and energy impacts of increased size and weight limits. Transportation Systems Center, Cambridge, Massachusetts. HRIS 16-188659 ACTIVE

(4) Mass Distribution Characteristics of Children. To obtain mass distribution parameters of children from their anthropometric characteristics. Civil Aeromedics Institute, Oklahoma City, Oklahoma. HRIS 51-160463 ACTIVE

(5) Investigating Safety of Wheelchair Boarding and Securement Hardware for Transporting Wheelchair Passengers. To develop safety guidelines for wheelchair loading equipment and evaluate systems for ease of use, cost and user acceptability. National Highway Traffic Safety Administration, Washington, D. C. HRIS 51-059876 ACTIVE

4. DEPARTMENT OF AGRICULTURE

(1) Transportation Model of the Grain and Fertilizer Sector of Northwest Ohio. To describe the present condition of rural transportation, estimate flows of grain and fertilizer, determine effects of alternative governmental policies on transportation operations, etc. Ohio Agricultural R and D Center, Columbus, Ohio. HRIS 15-138365 (Citations) ACTIVE

(2) Reducing Physical and Quality Losses of Whole Soybeans in Transportation and Handling. To determine, and reduce, the physical and quality losses in the handling and transportation of seed, food and processing grade soybeans shipped to domestic and world markets. Agricultural Marketing Research Laboratory, Beltsville, Maryland. HRIS 15-138400 (Citations) COMPLETE

(3) Plan and Promote Improved Wholesale Food Marketing Facilities and Methods in New Orleans. To improve the wholesale marketing facilities for food in New Orleans. Agricultural Research Service, Beltsville, Maryland. HRIS 15-083507 (Citations) ACTIVE

4. DEPARTMENT OF AGRICULTURE (contd)

(4) Plan and Promte Improved Wholesale Food Marketing Facilities and Methods in Dallas. To improve the wholesale food marketing facilities in Dallas, Texas. Agricultural Research Service Beltsville, Maryland. HRIS 15-083508 (Citations) ACTIVE

(5) Improved Systems for Shipping and Handling Groceries from Manufacturer to Wholesale Warehouse. To measure the cost for less-than-truckload shipments of groceries from manufacturer to wholesaler and determine feasibility of reduced costs with a regional warehouse to store products of several manufacturers and ship full truck loads. Agricultural Marketing Research Institute, Beltsville, Maryland. HRIS 15-083511 (Citations) ACTIVE

(6) Evaluation of Public Transportation Policies Affecting Agriculture. To assess the economic performance of general-purpose transportation system for agriculture and the effect on efficiency and equity of proposed adjustments in services and rates. Economic Research Service, Washington, D. C. HRIS 15-099646 (Citations) ACTIVE

(7) An Economic Evaluation of Frozen Food Handling in Warehouses, Transportation and Retail Studies. To evaluate the economic advantages and technical efficiencies of improved handling methods, equipment and layouts used for frozen foods in warehouses. Food Distribution Research Laboratory, Beltsville, Maryland. HRIS 15-083514 (Citations) ACTIVE

(8) Determine Costs for Different Systems for Marketing Potatoes from the Grower to the Retail Store. To develop the least cost systems for handling, distribution, storage, processing and packaging potatoes. Agricultural Marketing Research Institute, Beltsville, Maryland. HRIS 15-083506 (Citations) COMPLETE

(9) Analyses of Regional Development and Growth in the United States. To develop and maintain data related to economic development and growth, the differences in regions, and evaluate the factors causing these differences. Economic Development Division, Washington, D. C. HRIS 15-136118 ACTIVE

(10) Alternative Structures for Increasing Efficiency in Inter-and Intra-Regional Grain Marketing Systems. Determine ways to increase economic efficiency in marketing, transporting and processing, and evaluate the impact of alternative transportation rate structures. Georgia Agricultural Experiment Station, Experiment, Georgia. HRIS 15-138378 (Citations) ACTIVE

(11) Application of Insecticides into Transportation Facilities to Prevent Insect Damage to Food and Feed. To evaluate and develop methodology for effective use of insecticides as residual-type sprays, space treatments and fumigation of such facilities, as trucks, aircraft, rail cars, etc. Agricultural Research Service, Savannah, Georgia. HRIS 16-195928 ACTIVE

(12) Improving Refrigeration Systems in Van Containers for Transport of Perishables. To improve these systems for the transport of perishables and apply the new technology and equipment for environmental control and air distribution to commercial practice. Agricultural Marketing Research Institute, Beltsville, Maryland. HRIS 16-195918 ACTIVE

(13) The Influence of Transportation Stress on Feeder Cattle. To identify the factors that cause respiratory symptoms in cattle during transportation and evaluate remedies. Agricultural Experiment Station, Garden City, Kansas. HRIS 16-153719 ACTIVE

4. DEPARTMENT OF AGRICULTURE (contd)

(14) Location and Facility Characteristics of U. S. Grain Ports for Maximum Marketing Transportation Efficiency. To determine the time and cost performance of grain ports under alternative stochastic conditions and evaluate how performance is affected by altering port numbers and/or capacities. Texas Agricultural Experiment Station, College Station, Texas. HRIS 16-193103 ACTIVE

(15) Utilization and Improvement of Vehicles for Transport of Grain. To improve the utilization of present transport equipment and develop new concepts in order to hold down costs and reduce loss and damage during transport. Agricultural Research Service, Beltsville, Maryland. HRIS 16-107295 ACTIVE

(16) Improving Refrigerated Transportation of Fresh Meats. To improve the efficiency of transporting fresh meat from packinghouses to consignee using refrigerated trailers. Agricultural Marketing Research Institute, Beltsville, Maryland. HRIS 16-195927 (Citations) ACTIVE

(17) Social and Economic Consequences of Energy Development in the Northern Great Plains. To analyze the effects of alternative forms of coal development and uses in employment, income and population and community service needs and revenues of local governments. Economic Development Division, Washington, D. C. HRIS 17-083524 (Citations) ACTIVE

(18) Plant Materials Study. Study of plants for erosion control, revegetation and general landscape use. Soil Conservation Service, Washington, D. C. HRIS 23-101178 (Citations) COMPLETE

(19) Planting Techniques and Materials for Revegetation of California Roadsides. Studies of adaptation and establishment of various types of plants and shrubs for erosion control and revegetation of the Mojave Desert and adjacent areas. Soil Conservation Service, Davis, California. HRIS 23-192538 ACTIVE

(20) Experimental Live Shelterbelt and Sage Brush Stripping. To determine survivability rates for various plant species in harsh climates and the feasibility of substituting live shelterbelts for snow fences. Rocky Mountain Forest and Range Experiment Station, Laramie, Wyoming. HRIS 23-136116 ACTIVE

(21) Advancing the Control of Tumbleweed: Laboratory and Field Research of Three Species of Weed Feeding Insects. To develop weed feeding insects to control weed growth. Biological Control of Weeds Laboratory, Albany, California. HRIS 23-192537 ACTIVE

(22) Visibility as Related to Wind in Ground Blizzards. Study of visibility as function of wind speed during snow drifting conditions, so as to develop relationships that would assist in predicting visibility. Rocky Mountain Forest and Range Experiment Station, Laramie, Wyoming. HRIS 40-157106 ACTIVE

(23) Measured Wind Loads on Snow Fences. To measure wind loads on 12-foot tall snow fences and determine the drag coefficients. Rocky Mountain Forest and Range Experiment Station, Laramie, Wyoming. HRIS 40-157103 ACTIVE

(24) Hydrology of Sagebrush Lands and the Management of Blowing Snow in High Plains. To improve on-site utilization of precipitation on high elevation sage brush lands and for control and management of wind-blown snow. Rocky Mountain Forest and Range Experiment Station, Laramie, Wyoming. HRIS 40-193270 ACTIVE

4. DEPARTMENT OF AGRICULTURE (contd)

(25) Biological Control of Yellow Starthistle and Field Bindweed along California Highways. To provide for the development and implementation of weed feed insects mites, and pathogens to reduce the abundance and rate of spread of these growths. Agriculture Science and Education Administration, Albany, California. HRIS 40-153469 ACTIVE

(26) Traction and Transport Devices. To determine the effect of soil properties, tread design, internal construction and the shape and area of contact surface on traction and flotation of selected devices and develop techniques for prediction of traction performance of rigid wheels in soils. Agricultural Research Service, Auburn, Alabama. HRIS 53-138383 ACTIVE

(27) Substitution of Ambient Air Cooling for Mechanical Refrigeration in Van Containers. To improve designs in the waterproof marine ambient air cooling system for dry freight van containers. Agricultural Research Service. Beltsville, Maryland. HRIS 53-153759 ACTIVE

(28) Development of Automated System for Weather Monitoring and Traffic Operations. Development of a computer-controlled system for traffic operations on I-80, based on real-time analysis of wind and visibility data from existing monitoring stations. Rocky Mountain Forest and Range Experiment Station, Laramie, Wyoming. HRIS 54-157098 COMPLETE

(29) Soil Surveys. To prepare an engineering applications section for each county soil survey report. Soil Conservation Service, Washington, D.C. HRIS 61-108634 (Citations) ACTIVE

(30) Engineering Geology. To add engineering-geology information to soil maps and reports covering soil and rock properties. Soil Conservation Service, Washington, D. C. HRIS 61-108635 (Citations) ACTIVE

5. DEPARTMENT OF COMMERCE

(1) Environmental Variable Study. To evaluate for the Motor Vehicle Manufacturers Association the dependence of medium and heavy duty truck noise measurements on environmental variations. National Bureau of Standards, Washington, D.C. HRIS 17-178026 ACTIVE

(2) Tire Noise Research. National Bureau of Standards, Washington, D. C. HRIS 17-059555 ACTIVE

(3) Monitoring Construction of Alaska Pipeline. To provide technical assistance to the Alaska Pipeline Office to minimize effects of construction on anadromous fishes at stream crossings, and effects of the terminal at Port Valdez on marine environment. Auke Bay Fisheries Laboratory, Auke Bay, Alaska. HRIS 33-134861 ACTIVE

(4) Mechanical Safety of Consumer Products. To provide technical support to the Consumer Product Safety Commission in developing mandatory safety standards for products where mechanical factors are of primary importance. National Bureau of Standards. Washington, D.C. HRIS 51-178029 ACTIVE

(5) Obstruction of Visibility. Develop an instrument to detect and distinguish among various obstructions to visibility such as rain, snow, dust, etc. Environmental Research Laboratories, Boulder, Colorado. HRIS 51-153571 ACTIVE

(6) Test Methods for Automotive Transducers. To conserve energy by saving gasoline through development of performance test methods for pressure transducers used in automobiles. National Bureau of Standards, Washington, D.C. HRIS 53-178027 ACTIVE

5. DEPARTMENT OF COMMERCE (contd)

(7) Retroreflectance Standards. To make accurately measured standard retroreflectors and associated filters available for calibrating retroreflectometers. National Bureau of Standards, Washington, D.C. HRIS 53-178030. ACTIVE

(8) Automotive Exhaust Flowmeter. Development of an essentially nonintrustive flowmeter for use along with existing real-time pollutant concentration detectors for measuring tailpipe emissions. National Bureau of Standards. Washington, D.C. HRIS 53-178028 ACTIVE

6. DEPARTMENT OF DEFENSE

a. Department of the Air Force

(1) USAF-DOT/NHTSA Impact Studies Interagency Agreement. To develop and evaluate personnel impact protection systems and advance technologies required to improve system design. Aerospace Medical Research Laboratory. Dayton, Ohio. HRIS 51-179618 ACTIVE

b. Department of the Army

(1) Utilization of Marginal Construction Materials for LOC. To develop methods and procedures whereby soil and rock with properties not in accordance with existing criteria and specifications can be modified to provide satisfactory service. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-135528 ACTIVE

(2) Traffic Loading Analysis and Model. To obtain aircraft traffic distribution and loading data essential to the development of improved method of pavement design for both rigid and flexible pavements and develop computer aids for considering traffic in pavement design,Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-179612 ACTIVE

(3) Surface Texture Analysis. To measure the surface texture of pavements and the effects of skid resistance, tire wear and pavement deterioration. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-179609 ACTIVE

(4) Smoothness Analysis. To define and evaluate the smoothness requirements for military airfields and develop prediction methodology for determining type and time for rehabilitation action. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-135522 ACTIVE

(5) Pavement Response Analysis. To develop mathematical models to predict the response of total pavement systems subjected to various loading inputs. Waterways Experiment Station, Vicksburg, Mississippi HRIS 24-179606 ACTIVE

(6) Pavement Performance Evaluation. To develop methodology for rating performance of pavement systems for airfields, heliports, roads and streets. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-135509 ACTIVE

(7) Pavement Environmental Considerations. To study such variables as moisture, temperature, drainage, and other elements that contribute to the deterioration of pavements and foundations. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-135508 ACTIVE

(8) Pavement Deterioration Analysis. To develop methodology for analysis of and prediction of functional and structural deterioration and resultant attrition on serviceability of airfields and roads. Waterways Experiment Station. Vicksburg, Mississippi. HRIS 24-179613 ACTIVE

(9) Pavement Design Parametric & Sensitivity Analysis. To identify important pavement behavioral parameters, quantify the sensitivity of the pavement behavior to changes in these parameters and develop technology to control those variances most sensitive to performance. Waterways Experiment Station. Vicksburg, Mississippi. HRIS 24-135506 ACTIVE

6. DEPARTMENT OF DEFENSE (contd)

b. (10) Effects of Horizontal Fiber Layers in Pavement Systems. To determine reinforcing effect of thin horizontally oriented fiber cloth and fiber membrane layers between normal pavement layers. Waterways Experiment Station. Vicksburg, Mississippi. HRIS 24-179616 ACTIVE

(11) Develop Performance Models. To develop a systematic methodology to predict the performance of pavements subjected to any type of vehicle loads. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-179608 ACTIVE

(12) Development of Pseudoplastic Deformation Theory for Pavement Soil System Behavior. To determine study and model the internal behavior patterns of pavement soil systems. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-179614 ACTIVE

(13) Analysis of Grid-reinforced Bases and Subbases for Pavements and Foundations. To determine the performance characteristics of base and subbases layers mechanically reinforced by box-grid systems of various sizes and materials. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-179615 ACTIVE

(14) Accumulative Damage Prediction Hypothesis for Pavement Systems. To develop a method for assessing degree of damage and for accumulating the individual increments of damage impacted to pavement systems by loadings for predicting life lost and remaining. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 24-179611 ACTIVE

(15) Rational Design of Tunnel Supports. To develop design procedures and to encourage adoption of improved construction techniques that satisfy structural and economic requirements. Missouri River Engineering Division, Omaha, Nebraska HRIS 25-135550 ACTIVE

(16) Piles in Permafrost for Bridge Foundations. To develop and improve design criteria for piles in permafrost. Cold Regions Research and Engineering Laboratory, Juneau, Alaska. HRIS 25-153426 ACTIVE

(17) Evaluation of Shotcrete Theory and Techniques. To evaluate shotcrete as a construction material for application to Army projects. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 32-135495 ACTIVE

(18) An Investigation of the Reduction in Ultimate Strength of Fiber Reinforced Concrete Due to Cyclic Flexural Loading. To determine the effects of repetitive loadings on the flexural strength reduction of fiber reinforced concrete. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 32-177760 ACTIVE

(19) Corrosion Behavior of Cracked Fibrous Concrete. To develop design criteria by laboratory studies and field inspections to alleviate the effects of hostile environments on exposed and unexposed fibers in a fibrous concrete structure. Army Construction Engineering Research Laboratory, Champaign, Illinois. HRIS 32-134905 ACTIVE

(20) Rapid Excavation with Explosives -- Explosive Excavation in Differing Geological Media and Topography. To develop improved techniques of excavating with explosives that lead to cost stabilization or reduction. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 33-135516 ACTIVE

(21) Rapid Excavation with Explosives -- Charge Shape, Emplacement Patterns and Firing Techniques. To develop controlled explosions and measurements to get a large structural excavation where cost advantage would result from use of larger charges. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 33-135518 ACTIVE

6. DEPARTMENT OF DEFENSE (contd)

b. (22) Construction Design Technology Base. To determine present construction capability by comparing present design criteria to guide specifications, construction technology and quality control procedures for pavements and identify incompatibilities in the technology. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 33-135488 ACTIVE

(23) Growth and Investigation of Pozzolanic Crystalline Reaction Products. To determine the crystal lattice spacing difference phenomena due to differences in absorbed cations on different clays. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 34-135499 ACTIVE

(24) General Purpose Expedient Engineering Material. To develop a general purpose expedient engineering material to provide load-bearing surfacing for roads and storage areas in remote inaccessible areas. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 34-135498 ACTIVE

(25) Rereps Validation Tests. To determine the ability of a regulated-set cement runway crater repair to withstand aircraft loads within 4 hours of the repair. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 40-177761 ACTIVE

(26) Pavement Maintenance Work Planning and Interfacing with Integrated Facility System. To develop procedures and guidance criteria to aid in effectively work planning the maintenance and repair of pavements. Army Construction Engineering Laboratory, Champaign, Illinois. HRIS 40-177602 ACTIVE

(27) Development of Design and Construction Principles for Upgrading Deteriorated Pavements. To develop expedient procedures for assessing structural and functional adequacy of existing pavement and provide guidance for its upgrading to meet operational requirements. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 40-135493 ACTIVE

(28) Super Elastic Alloys for Shock Absorber Systems. A study of the application of super elastic alloys to shock absorber systems for gun mounts or automobile bumpers. Materials and Mechanics Research Center, Watertown, Massachusetts. HRIS 53-135139 ACTIVE

(29) Scientific and Technical Information Center for Soil Mechanics. To establish and operate a soil mechanics Information Analysis Center. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 61-135521 ACTIVE

(30) Material Characterization Procedures for Design of Pavements. To develop methodology for characterizing structural properties of various types of pavement materials and formulate definitive procedures yielding quantitative parameters for pavement design. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 61-179607 ACTIVE

(31) The Influence of Polymers on the Engineering Properties of Cement-Stabilized Soils. To determine the feasibility of improving the compressive and tensile properties of soil-cement by addition of polymers. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 61-179610 ACTIVE

(32) Structural Soil Construction Methods. To develop construction methods for using materials available in Theaters of Operations to build soil structures. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 62-177762 ACTIVE

6. DEPARTMENT OF DEFENSE (contd)

b. (33) Accelerated Curing Test for Lime and Lime-Flyash Stabilized Soils. To develop an accelerated curing test procedure to determine the most advantageous percentages of the mixtures and the stabilization susceptibility of troublesome soils. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 62-109558 ACTIVE

(34) Soil Stabilization. To develop and evaluate a chemical soil stabilization system for use in expedient construction of roads, airfields and other areas. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 62-135523 ACTIVE

(35) Rapid Assessment of Rock Mass Conditions. To develop a technique for rapid assessment of the integrity of rock slopes, tunnel rock, dam abutment and embankments. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 63-135514 ACTIVE

(36) Use of Frost Susceptible Soils in Roads and Airfields. To develop design and construction techniques for construction and stabilization of membrane-encapsulated-soil-layers (MESL) road and airfields in a winter environment. Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. HRIS 63-179605 ACTIVE

(37) Improved Tunnel and Rock Cavity Support System. To provide the tools needed to analyze and predict rock behavior around lined openings under operating conditions and provide practical information concerning support offered by various means to jointed rock. Waterways Experiment Station, Vicksburg, Mississippi. HRIS 63-179617 ACTIVE

(38) Prethawing Permafrost and Consolidation in Preparation for Construction. To develop efficient and economical methods for prethawing permafrost and establish criteria for consolidation and stabilization to achieve desired bearing capacity. Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. HRIS 64-082313 ACTIVE

(39) Seasonal Change in Strength and Stiffness of Soils and Base Courses. To develop techniques and procedures for characterization and prediction of the structural behavior of soils during the frozen,thawing and thawed states. Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. HRIS 64-1777777 ACTIVE

c. Department of the Navy

(1) Pulser Applications Study. An evaluation of the energy requirements for a rock excavation technique utilizing short duration stress pulses for rock breaking. Naval Civil Engineering Laboratory, Port Hueneme, California. HRIS 33-153529 ACTIVE

(2) Marine Piling Fumigation Study. To evaluate the fungitoxic properties of fumigants as decay retardants in wood marine piles. Atlantic Division, Norfolk, Virginia. HRIS 34-157044 ACTIVE

(3) Containerized Ordance Transportation Equipment. To explore new concepts and techniques for shipping containerized naval ordnance on existing DOD/Commercial flatbed trailers and rail flatcars. WeaponsHandling Laboratory, Colts Neck, New Jersey. HRIS 53-130967 ACTIVE

(4) Models for Complex Systems. To develop probabilistic models for complex systems, for such uses as numbers of vehicles in moderately congested traffic that will cross a fixed point. Naval School of Engineering, Monterey, California. HRIS 55-179340 ACTIVE

7. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

(1) Causal Factors -- Buildings and Highway Construction. To develop techniques for evaluating injuries and fatalities occuring in these types of construction. National Institute for Occupational Safety and Health. Morgantown, West Virginia. HRIS 51-193243 ACTIVE

9. DEPARTMENT OF THE INTERIOR

(1) Inflow Hydrograph Study. To define the magnitude and frequency of flood volumes expected from small drainage areas and the shape of the flood hydrographs in relation to the physical characteristics of small basins. Geological Survey, Cheyenne, Wyoming. HRIS 22-100858 (Citations) COMPLETE

(2) Collection and Analysis of Streamflow and Related Hydraulic Data for Design of Highway Bridges and Culverts. To collect and analyze all data on stream flow and floods on Iowa streams. Geological Survey, Iowa City, Iowa. HRIS 22-100974 (Citations) ACTIVE

(3) Determination of Peak Discharge and Frequency for Small Watersheds in Colorado. To develop more accurate techniques for estimating magnitude and frequency of floods from small watersheds to assist in more efficient culvert design. Geological Survey, Denver, Colorado. HRIS 22-101006 ACTIVE

(4). Drainage Area Flow Research. To gage small watersheds and develop method for estimating peak rates of runoff. Geological Survey, Helena, Montana. HRIS 22-020046 ACTIVE

(5) Effects of Urbanization on Runoff from Small Drainage Areas in Ohio. To collect over a ten-year period rainfall-runoff data and develop a regional flow model for estimating peak flow from ungaged small drainage areas and varying degrees of urbanization. Geological Survey, Columbus, Ohio. HRIS 22-083773 ACTIVE

(6) Effects of Urbanization on the Magnitude and Frequency of Floods on Small Streams. Define the effect of urbanization on magnitude and frequency of floods on small streams in Tennessee. Geological Survey, Nashville, Tennessee. HRIS 22-177911 ACTIVE

(7) Flood Frequency Characteristics of Urban Streams in Georgia. To collect and analyze hydrological data for selected urban streams to develop relationships to estimate magnitude and frequency of floods in urban streams. Geological Survey, Doraville, Georgia. HRIS 22-177572 ACTIVE

(8) Flood Frequency in Small Drainage Areas. To determine flood-discharge frequency relations for streams draining five square miles or less in Mississippi. Geological Survey, Jackson, Mississippi. HRIS 22-020040 (Citations) ACTIVE

(9) Flood Frequency on Small Streams in Louisiana. To obtain and analyze hydrological data to be used in design of highway drainage structures. Geological Survey, Baton Rouge, Louisiana HRIS 22-020167 COMPLETE

(10) Flood Frequency Study. To obtain and analyze data related to magnitude, volume and frequency of floods for drainage areas of less than 15 square miles. Geological Survey, Albuquerque, New Mexico. HRIS 22-100856 ACTIVE

(11) Flood Frequency Synthesis for Small Urban Streams in Alabama. To provide an interim method for estimating magnitude and frequency of floods in urban watersheds of one to fifteen square miles. Geological Survey, University Alabama. HRIS 22-192456 ACTIVE

9. DEPARTMENT OF THE INTERIOR (contd)

(12) Flood Volume Frequency of Small Streams in Indiana. To develop a method for estimating flood runoff volume and frequency on small rural watersheds of less than 20 square miles. Geological Survey, Indianapolis, Indiana. HRIS 22-101065 (Citations) ACTIVE

(13) Hydraulic Performance of Bridges. To develop a means of predicting changes in water-surface elevations (backwater) due to highway construction. Geological Survey, Jackson, Mississippi. HRIS 22-100875 (Citations) COMPLETE

(14) Hydraulic Performance of Multiple Bridge Systems. A water resources investigation of Mississippi with special reference to hydraulic performance of multiple bridge systems. Geological Survey, Jackson, Mississippi. HRIS 22-135535 ACTIVE

(15) Hydrologic Research. To gage small watersheds and develop a method for estimating peak rates of runoff. Geological Survey, Portland, Oregon HRIS 22-101075 ACTIVE

(16) Hydrologic Studies. To collect flood hydrographs and rainfall records at drainage areas of less than ten square miles and analyzed to establish relationships of flood frequencies. Geological Survey, Richmond, Virginia. HRIS 22-100971 ACTIVE

(17) Hydrologic Study of Small Watersheds. To develop an accurate method for estimating runoff of various recurrence intervals for watersheds of less than 25 square miles in New Hampshire. Geological Survey, Concord, New Hampshire. HRIS 22-192884 ACTIVE

(18) Investigation and Analysis of Flood Hydrographs from Small Drainage Basins in South Dakota. To collect and analyze rainfall, basin characteristics and flood flow to develop relationships suitable for predicting magnitude and frequency of floods from small watersheds. Geological Survey, Huron, South Dakota. HRIS 22-100968 ACTIVE

(19) Investigation and Analysis of Floods from Small Drainage Areas in Ohio. A supplemental study of flood drainage characteristics of areas smaller than one square mile. Geological Survey, Columbus, Ohio. HRIS 22-100871 COMPLETE

(20) Investigation and Analysis of Floods from Small Northwestern Strip-Mined, Forested Drainage Basins in Ohio. To provide data and information on flood characteristics of these basins, so as to develop models for prediction of floods. Geological Survey, Columbus, Ohio. HRIS 22-177866 ACTIVE

(21) Investigation of Water Resources. To make a flood frequency study of existing stream-flow records, collect peak discharge rates and flood measurements, Geological Survey, Anchorage, Alaska. HRIS 22-101080 ACTIVE

(22) Magnitude and Frequency of Floods from Selected Drainage Basins in South Dakota. To define the magnitude and frequency of flood peaks from ungaged rural watersheds. Geological Survey, Huron, South Dakota. HRIS 22-083774 ACTIVE

(23) Monitoring Program of Small Drainage Areas in Georgia. To verify the estimating equations developed in 1975 for flood-frequencies, and verify these equations for areas where flood data is not presently available. Geological Survey, Doraville, Georgia. HRIS 22-177571 ACTIVE

(24) Program for Investigation and Analysis of Floods from Small Drainage Areas in Delaware. To obtain an adequate measure of streamflow characteristics which will provide a method of estimating magnitude and frequency of floods. Geological Survey, Towson, Maryland. HRIS 22-021222 COMPLETE

9. DEPARTMENT OF THE INTERIOR (contd)

(25) Rainfall-Runoff and Rainfall-Sedimentation Discharge Relations in Hawaiian Type Watersheds. To determine these relationships considering factors of basin characteristics and highway construction. Geological Survey. Honolulu. Hawaii. HRIS 22-100999 (Citations) COMPLETE

(26) Runoff Studies on Small Drainage Areas. Collection and analysis of hydrologic and hydraulic data for small streams, rainfall, flood volumes, etc. in order to determine flood peak frequencies for any area in the State. Geological Survey, Charleston, West Virginia. HRIS 22-100863 ACTIVE

(27) Scour Research. To observe and record magnitude of those most significant factors believed to be related to scouring around bridge piers. Geological Survey, Anchorage, Alaska. HRIS 22-133589 ACTIVE

(28) Small Drainage Area Survey. Investigation and analysis of floods from small drainage areas in Arizona. Geological Survey, Tucson, Arizona. HRIS 22-100861 COMPLETE

(29) Water Resources Study. To obtain and analyze data on small drainage basins of less than 20 square miles for use in hydraulic design of drainage structures. Geological Survey, Nashville, Tennessee. HRIS 22-100985 (Citations) COMPLETE

(30) Erosion-Control Measures in Highway Construction, Pennsylvania. To evaluate the effectiveness of various erosion-control measures used in highway construction, measuring precipitation, runoff and sedimentation discharge. Geological Survey, Harrisburg, Pennsylvania. HRIS 23-104602 COMPLETE

(31) Field Evaluation of Erosion Control Measures used in Highway Construction. Evaluation of different erosion control measures on five contiguous small streams for pre-, mid-, and post-construction conditions. Geological Survey, Harrisburg, Pennsylvania. HRIS 23-156768 COMPLETE

(32) Nonferrous Materials from Automotive Scraps. To develop improved methods and equipment for recovery and recycling plastics from automobile shredder residue and for producing low-vinyl fuel from residue, and for recovery of nonferrous metals and glass from the nonmagnetic rejects from the shredding operations. Bureau of Mines, Salt Lake City, Utah. HRIS 34-193139 ACTIVE

(33) A Study of the Spergen Formation of Southeastern Iowa. To provide detailed grographic and stratigraphic information on location of the formation. Geological Survey, Iowa City, Iowa. HRIS 61-177648 ACTIVE

(34) Theoretical Investigations and Case Studies of Rock and Support Interactions. To find means of predicting rock loads and develop methodology for determining the design of support systems in tunnel construction. Bureau of Mines, Spokane, Washington. HRIS 63-136075 ACTIVE

11. INDEPENDENT AGENCIES

a Environmental Protection Agency

(1) Morphology and Composition of Particulates Emitted by Mobile Sources. The use of electron-optical techniques to determine these particulates. Emissions Measures and Characteristics Division, Durham, North Carolina. HRIS 17-177851 ACTIVE

(2) Highway Study. To measure concentrations downwind on moving 1/32 scale models in a meterological wind tunnel, considering wind orientation, traffic densities. Environmental Sciences Research Laboratory, Durham, North Carolina. HRIS 17-177850 ACTIVE

11. INDEPENDENT AGENCIES (contd)

a. (3) Evaluation of Highway Air Quality Simulation Models. To test and improve highway air quality simulation models, comparing estimates with field measurements of concentrations of pollutants. Meteorological and Assessment Division, Durham, North Carolina. HRIS 17-177849 ACTIVE

(4) Air Exposures and Their Effects - Refinement of Public Health Risk Assessment on Regulated and Nonregulated Transportation Pollutants. A multi-disciplinary research program focusing on consequences of regulated and non-regulated pollutants from mobile sources. Laboratory Studies Division, Cincinnati, Ohio. HRIS 17-177862 ACTIVE

(5) The Effects of Environmental Contaminants on Susceptibility to Infection. Study of the effects of inhaled catalyst-treated automobile exhausts on animals for periods ranging from 6 hours to 3 months. Health Effects Research Laboratory, Cincinnati, Ohio. HRIS 52-177864 ACTIVE

(6) Neurophysical and Behavioral Tests to Study the Effects of Automotive Catalytic Emissions. To assess the effects of inhalation of both catalytic treated and non-treated automobile exhaust on rats. Toxicology Division, Cincinnati, Ohio. HRIS 52-177865 ACTIVE

(7) Determine Composition of Tail Pipe Emissions from Production and Prototype Cars. To study the changing patterns of automotive exhaust of harmful components as vehicle and fuel technology reacts to demands for energy-conservative transportation. Environmental Science Research Laboratory, Durham, North Carolina. HRIS 53-177848 ACTIVE

d. National Aeronautics and Space Administration

(1) Preparation of DOT Near Term Research and Development Report. To prepare a DOT Near Term (5 year) R&D Report to include the organization and analysis of the material outlining the projects which support DOT's RD&D effort. Jet Propulsion Laboratories, Pasadena, California. HRIS 11-160379 ACTIVE

(2) Development of a Project Control Management System (PCMS). To develop definitive applications of NASA-developed Risk Management, Configuration Management and Quality Assurance to the Dade County Rapid Transit Project. NASA Headquarters, Washington, D. C. HRIS 11-160254 ACTIVE

(3) Integrated Multi-Modal Transportation System Technology. To contribute to providing for the nation's future transportation needs based on projection of innovative technologies. Ames Research Center, Moffett Field, California. HRIS 12-177531 ACTIVE

(4) Evaluation of Remote Sensing Applied to Civil Works. To determine the feasibility of assessing civil works sites by measuring soil moisture using remote sensing. Ames Research Center, Moffett Field, California. HRIS 21-135249 ACTIVE

(5) Environmental Engineering and Energy Management (Flywheel Energy Storage System). To apply advanced space technology to the development of flywheel energy storage systems for application to ground transportation. Langley Research Center, Langley Station, Virginia. HRIS 53-136017 ACTIVE

f. Small Business Administration

(1) Transportation Services for the Handicapped and Elderly. Analysis of data from three cities on existing services and determine whether and under what conditions and/or coordination of transportation efforts of several activities is feasible, and develop strategies for achieving desirable consolidations or coordinations. Headquarters, Washington, D. C. HRIS 12-059433 ACTIVE

11. INDEPENDENT AGENCIES (contd)

f\. (2) Evaluation of Pneumatic System for the Transport of Muck in Tunneling. To provide an experimental design for the demonstration of the system. Los Angeles Office, California. HRIS 33-059870 ACTIVE

h\. Veterans Administration

(1) Alcoholism and Highway Safety. To examine a considerable amount of data relative to supporting a dependent counter-dependent conceptualization of alcoholism. Veteran Administration Hospital, Hines, Illinois. HRIS 52-106564 ACTIVE

12. DEPARTMENT OF ENERGY

(1) Development of Fuel Cell Technology for Application of Fuel Cell Powered Vehicles. A feasibility investigation of fuel cell systems in transportation applications. Los Alamos Scientific Laboratory, Los Alamos, New Mexico. HRIS 53-192898 ACTIVE

UNITED STATES - STATE AND LOCAL

1. ALABAMA

a. Alabama State Highway Department: 11 South Union Street, Montgomery 36130

(1) Air Quality Analysis. To develop a family of curves to simplify the analysis necessary for environmental studies. C.A. Treadway, J.M. Bryan, Environmental Technical Section. HRIS 17-192450 ACTIVE

(2) Correlation of Roughometer Roughness Index with Present Serviceability Index. To correlate serviceability index with roughometer measures at 40 mph. F.L. Holman, Bureau of Materials and Tests. HRIS 24-177452 ACTIVE

(3) 3R Program Evaluation. To quantitatively evaluate the safety and other benefits of the 3R program. F.L. Holman, Bureau of Materials and Tests. HRIS 24-192452 ACTIVE

(4) Determination of Strain and Temperature Levels in a Precast-Prestressed Concrete Girder during Construction. To determine changes in stresses in the prestressing strands inside and outside of the concrete and temperatures of forms and concrete during steam curing. J.H. Edwards, B.L. Williams, Bureau of Research and Development. HRIS 25-153410 ACTIVE

(5) Dampening Vibration in Luminaire Structures. To identify the nature of traffic induced vibrations in luminaires mounted on bridges. J.W. Keith, J.H. Edwards, Bureau of Materials and Tests. HRIS 25-177451 ACTIVE

(6) Lowering of Bituminous Mixing and Spreading Temperatures. To determine the extent to which such temperatures can be lowered without adversely affecting quality and durability of the finished product. R.E. Vaughn, Bureau of Materials and Tests. HRIS 31-177450 ACTIVE

(7) Concrete Properties for Rigid Pavement Design. To determine suitable values for modulus of elasticity and tensile strength for design. J.H. Edwards, Bureau of Materials and Tests. HRIS 32-133604 ACTIVE

(8) Effect of Loading Rate on Compressive Strength of Cement Mortar Cubes. To determine if there is a significant difference in the compressive strength of mortars at different loading rates. F.L. Holman, Bureau of Materials and Tests. HRIS 32-133606 (Citations) COMPLETE

(9) Wax Beads in Concrete. Study of the use of these beads in concrete and the effects of steam curing and the optimum heat treatment. F.L. Holman, Bureau of Materials and Tests. HRIS 32-133611 (Citations) COMPLETE

b. Alabama Department of Public Works: Montgomery, 36102

(1) Implementation and Operation of Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program. HRIS 51-055793 ACTIVE

c. University of Alabama: P.O. Box 1968, University, 35486

(1) Multi-state-Multi-modal Transportation Corridor Research Project. To identify and review Federal and State legislation pertinent to multi-modal transportation corridor development, the restraints imposed thereby and legislation needed to remove such restraints. R. E. Olson. HRIS 12 ACTIVE

(2) Design Parameters for Longitudinal Filter Cloth Lined Subsurface Drainage Systems. To develop design criteria and specifications for such drains. J. E. Ball. HRIS 22-177453 ACTIVE

1. ALABAMA (contd)

d. Auburn University: Auburn, 36830

(1) Efficient Vehicle Routing and Scheduling for Agribusiness Firms and Public Services. A survey of assembly and distribution fleets to determine how routes and schedules are established and the relative importance to transportation costs. W.E. Hardy, Jr., Dept. of Agricultural Economics and Rural Sociology. HRIS 15-153412 (Citations) ACTIVE

(2) Statistical Investigation of Pavement Skid Resistance Data. To determine if viable predictive models could be developed to predict skid numbers in terms of pavement and environmental variables. R.K. Moore, Dept of Civil Engineering. HRIS 24-192454 (Citations) COMPLETE

(3) Development of a Bridge Lifting System. To develop low cost, reliable, efficient and non-detrimental procedures for raising continuous span concrete bridges. G.E. Ramey. HRIS 25-177454 ACTIVE

(4) Control and Maintenance of Highway Vegetation. Evaluation of new lower-growing legumes and grasses for establishment on slopes and medians, including the maintenance aspects. R. Dickens, Dept. of Agronomy and Soils. HRIS 40-153409 ACTIVE

(5) Deformation of Earth Slopes as a Random Variable. To correlate the uncertainty of soil sampling with selection of test boring requirements and evaluate an economic statistical decision model to optimize earth slope designs. G.E. Ramey, Dept. of Civil Engineering. HRIS 63-110053 ACTIVE

(6) Lime Treatment of Alabama Black-belt Soils. To investigate the lime reactivity of several soils which are calcareous and smectitic in composition. R.K. Moore, Dept. of Civil Engineering. HRIS 61-192453 ACTIVE

g. State of Alabama: Montgomery, 36104

(1) A Motor Vehicle Diagnostic Inspection Demonstration Project. To provide the consumer with specific technical diagnoses to facilitate repair of failed components. HRIS 53-058080 ACTIVE

h. Alabama Power Company: 600 North 18th Street, P.O. Box 2641, Birmingham, 35202

(1) Electric Work Vehicle Purchase Program. To develop specifications for a van and an adequate order for over 100 of them for electric utilities. J.G. Reardon, Technical Services. HRIS 53-153413 ACTIVE

(2) Testing of an Electric Vehicle. To develop load research data to assist utilities in planning for large numbers of electric road vehicles in the 1980's. J. G. Reardon, Technical Services. HRIS 53-134859 ACTIVE

i. University of Alabama, Birmingham: 720 South 20th Street, Birmingham, 35294

(1) A Study of the Use of ICES to Improve the Management of Design and Construction of Public Works Projects. To assist local and state governments in utilizing ICES computer programs in design and construction activities. J.H. Appleton, School of Engineering. HRIS 21-153419 ACTIVE

j. Lockheed Missles and Space Company, Incorporated, Research and Engineering Center: 4800 Bradford Drive, Huntsville, 35807

(1) Loopwheel Suspension System. To further develop and evaluate feasibility of the loopwheel suspension concept for tracked military vehicles. W. Trautwein. HRIS 41-192457 ACTIVE

2. ALASKA

a. Alaska Department of Transportation and Public Facilities: Pouch Z, Juneau, 99811

(1) Re-vegetating Silt Cutbanks for Erosion Control. To design, install and observe performance of several different experimental measures for control or prevention of erosion of silt cutbanks. Londagin. HRIS 23-153425 ACTIVE

(2) Control of Permafrost Degradation by Insulation. An experimental construction project to evaluate the use of a layer of styrofoam under a base course to reduce or eliminate degradation of underlying permafrost. D.C. Esch, Harding. HRIS 24-101429 ACTIVE

(3) Pavement System Evaluation of Alaskan Highways. To examine effect of layer thickness and material properties on flexural performance and a comparison of actual properties with design and as-built specifications. D.C. Esch, W. Slater, J.W. Henry. HRIS 24-153422 ACTIVE

(4) Pavement Performance Study. Evaluation of several recently constructed pavements to determine whether the physical and chemical properties of the asphalt material have affected the pavement performance. J.W. Henry, R. Head, J. Simpson. HRIS 24-153423 ACTIVE

(5) Pavement Performance Evaluation. A comparison of satisfactory pavements with those that have failed prematurely and relate degree of performance with causitive factors. Henry. HRIS 24-192460 ACTIVE

(6) Investigation of Ice Forces on Northern River Bridges. To provide information to FHWA on measurement and prediction of these forces. Johnson. HRIS 25-192459 ACTIVE

(7) Evaluation of Non-woven Fabric. An evaluation of non-woven asphalt-impregnated fabric under an asphalt hot mix overlay to prevent moisture, reflection cracking, etc. R. Miller. HRIS 34-177455 ACTIVE

(8) Investigation of Geophysical Methods. To evaluate several methods for detecting permafrost and ice in soil. Slater, Jurick. HRIS 61-192461 ACTIVE

(9) Control of Permafrost Degradation beneath Roadways by use of Peat Underlay. An investigation of the use of peat for this purpose. Esch. HRIS 64-192458 ACTIVE

b. University of Alaska: College, 99701

(1) Transportation System Development for Alaska. An analysis of affects of policy and transportation system development alternatives upon the economy of the state as well as upon the performance of the intercity freight transportation networks. L. Gorsuch. HRIS 11-055810 ACTIVE

(2) Joint U.S.-Canada Workshop on Northern Civil Engineering Research. Survey and assess current state-of-the-art, prospective developments in civil engineering assess current research and recommend research priorities. R.F. Carlson, Institute of Water Resources. HRIS 11-193298 COMPLETE

(3) Application of Remote Sensing to the Development of Regulations Governing Off-road Vehicle Use along the Trans-Alaska Pipeline. To locate sites along the pipeline particularly sensitive to off-road traffic, as well as to use it for vegetation mapping. School of Land Resources. HRIS 21-177456 ACTIVE

(4) Revegetation and Correlated Physical and Biological Parameters of Denuded Lands Near Fairbanks: Phase II. A continuing study of these lands to determine revegetation patterns on treated and untreated areas, physical and biological parameters correlated with the patterns. B.J. Neiland, Dept of Agricultural and Resource Economics. HRIS 23-153424 ACTIVE

2. ALASKA (contd)

b. (5) Surface Erosion and Sediment Yield Following Timber Harvesting. An evaluation of nature and extent of surface erosion, transport and sediment yield following such harvesting. R. Johnson, J. Aldrich, Institute of Water Resources. HRIS 23-193297 ACTIVE

(6) Cold Start Emissions from In-use Vehicles at Fairbanks. To determine the impact of CO emissions during cold starts on ambient CO levels. Leonard. HRIS 53-153420 ACTIVE

(7) Determinants of Choice in Outdoor Recreation. To identify and quantify the variables affecting individual choices. W. G. Workman, Dept. of Agricultural Economics. HRIS 55-192462 (Citations) ACTIVE

(8) An Economic Analysis of Present and Potential Trade between Alaska and Washington. To identify present and future trade, characteristics of the distribution system, suggest innovations to improve performance of the system, and determine composition of future trade. W.C. Thomas, Dept. of Agricultural Sciences. HRIS 90-083440 (Citations) ACTIVE

c. City of Anchorage: Anchorage, 99501

(1) Fixed Route and Demand Responsive Services. To test effect of providing a combination of these two types of service to an area with little mass transportation. R.E. Sharp, Office of Management and Budget. HRIS 12-036200 COMPLETE

d. Alaska Department of Public Safety: Pouch N, Juneau, 99811

(1) Fatality Analysis File. To establish a research-oriented file of highway fatalities in support of the Alcohol Countermeasures Program. HRIS 51-038812 ACTIVE

3. ARIZONA

a. Arizona Department of Transportation: 206 South 17th Avenue, Phoenix, 85007

(1) Pavement Management System Phase II - Verification of Performance Prediction Models and Development of Data Base. To prepare the system for implementation and carry out field trials for a reliability check. G. B. Way, J.C. Burns, J. Eisenberg. HRIS 11-177459 ACTIVE

(2) Effects of Differential Friction on a Braking Vehicle. To provide an implementation package on this friction to disseminate the findings of the research. J. C. Burns Pavement Evaluation and Special Studies Branch. HRIS 24-153429 COMPLETE

(3) Environmental Factor Determination from In-place Temperature and Moisture Measurements under Arizona Pavements. To develop, test and install the sensors and instrumentation to implement a program to monitor moisture and temperature changes. G.B. Way, Highways Division. HRIS 24-153430 (Citations) ACTIVE

(4) Photographic Evaluation of Pavement Surfaces. To provide data from field investigation to act as input to the Pavement Management System, using photographic, statistical and numerical methods. R.E. Kelley Safety Project Services. HRIS 24- 153436 ACTIVE

(5) Prediction of Structural Conditions of Pavements from Dynamic Deflection in Arizona. To evaluate the relationship between structural condition and dynamic deflection, analyzing new construction, existing pavements, and the effect of overlay thickness. J.C. Burns, G.B. Way, Materials Services Pavement and Special Studies Branch. HRIS 24-153439 ACTIVE

3. ARIZONA (contd)

a. (6) Phase II Verification of Performance Prediction Models and Development of Data Base. To implement previous work so that in three years the Department will have an operating system with reliable computer pavement performance models and staff organization. Way, Highways Division. HRIS 24-192468 ACTIVE

(7) Investigation of Chemical and Physical Properties of Rubber-Asphalt Cement. To study the chemical and rheological properties of this binder and how the properties change with time. W. J. Tolonen, R. L. Dunning, Highways Division. HRIS 31-153433 (Citations) COMPLETE

(8) Field and Laboratory Evaluation of Sulphur Asphalt Patching Materials. To develop a patching material of sulphur-asphalt that can be placed easily and remain durable. F. R. McCullagh, Highways Division. HRIS 31-192466 FUTURE

(9) Field and Laboratory Evaluation of Debonding Test Procedures. Develop a testing capability for the debonding test procedures previously developed at the University of Arizona. Scott, Highways Division. HRIS 34-082115 ACTIVE

(10) Development of Arizona's Optical Sieve Comparator. To prepare the final report describing the development of this comparator by the Department. G. Poluianov, Highways Division. HRIS 34-192465 ACTIVE

(11) Laboratory Evaluation of New Testing Apparatus for Defining the Saturated Surface Dry State of Highway Aggregates. To develop a machine that will rapidly and accurately make repeatable evaluations of specific gravity and absorption of fine grained materials. J.B. Hauskins, Jr., Research Section. HRIS 35-153434 (Citations) ACTIVE

(12) Fatal Accident Reporting System. To establish a research-oriented file of highway fatalities in support of the Alcohol Countermeasures Program. R. Kelley, Highways Division. HRIS 51-038809 ACTIVE

(13) Materials Pit Inventory. To inventory all known and potential sources of rock and aggregate. B. Kay, Materials Services. HRIS 61-100544 (Citations) ACTIVE

(14) Maximum Bedrock Accelerations from Earthquakes. To develop contour maps of probable earthquake accelerations of various bedrock and overburden formations. M. Toney. HRIS 63-177458 COMPLETE

c. University of Arizona: Tucson, 85721

(1) Soil Interpretation and Socio-economic Criteria for Land Use Planning. To determine the socio-economic causes and consequences of encroachment by urban activities and/or "ranchette" type developments on agricultural, desert and desert grassland areas. J. Wade, D. Cory, Agricultural Experiment Station. HRIS 15-115793 ACTIVE

(2) Introduction and Breeding Landscape Materials for Arid Regions. To seek, collect and introduce plant materials from arid regions with potential for landscape usage, including trees, shrubs, vines and groundcovers. W.D. Jones, C.W. Lee, L. Hogan, Department of Plant Science. HRIS 23-083443 ACTIVE

(3) Plants for Pollution and Erosion Control, Beautification and Browse. To identify plant species that are adapted for the revegetation and stabilization of mining wastes, fallow agricultural land, vacant urban lots and barren soil along highways and establishing them with natural rainfall. A.D. Day, T.C. Tucker, Plant Science. HRIS 23-195937 (Citations) ACTIVE

3. ARIZONA (contd)

c. (4) Testing Methods for Asphalt Rubber. To develop procedures to characterize certain physical properties of an asphalt-sulphur blend that can serve as a strain-relieving layer to preclude reflection cracking. Jimenez. HRIS 31-153441 COMPLETE

(5) Design of Asphalt-Rubber and Aggregate Mixtures. To develop a mixing procedure that will produce a material of the required characteristics and which can be handled by construction equipment, as well as a method of testing the mixture. R.A. Jimenez. HRIS 31-177460 COMPLETE

(6) Utilization of Copper Mill Tailings for Highway Construction. To determine the feasibility of using this material for earthwork construction. H.A. Sultan, Dept. of Civil Engineering. HRIS 34-133599 COMPLETE

(7) Automobile Fuel Conservation and Exhaust Emission Reduction by Utilization of Waste Heat for Fuel Reformation. To use exhaust heat to reform hydrocarbons or alcoholic fuels with steam to increase efficiency and reduce the hydrocarbons in the exhaust. L. B. Scott, Dept. of Electrical Engineering. HRIS 53-134862 (Citations) ACTIVE

f. Dynamic Science Corporation, Marshall Industries: 1850 West Pinnacle Peak Road
Phoenix, 85027

(1) Develop Test Methodology for Evaluation of Crash Comparability and Aggressiveness. To establish appropriate criteria for evaluating vehicle aggressiveness and investigate the Dynamic Science segmented load cell test device concept for measuring aggressiveness. S. Davis. HRIS 53-177462 ACTIVE

(2) Improved Visibility for School Buses During Adverse Weather. To develop realistic performance requirements and compliance test procedures for defogging equipment. S. Davis. HRIS 53-177461 COMPLETE

g. Engineers Testing Laboratories, Incorporated: P.O. Box 21387, Phoenix, 85036

(1) Chemical and Physical Properties of Asphalt-Rubber Mixtures, Part II - Product Specification and Test Procedures. To evaluate the problems encountered when asphalt-rubber pavement improvement and maintenance actions will determine changes in equipment to test these mixtures. J.C. Rosner. HRIS 31-177463 ACTIVE

(2) Physical and Chemical Properties of Asphalt Rubber Mixtures, Part III - Rubber Types and Optimum Particle Sizes. To determine the optimum rubber particle size relative to the visco-elastic properties of a given asphalt-rubber mixture. R. D. Pavlovich. HRIS 31-177464 FUTURE

(3) Rubber Type and Optimum Particle Size for Asphalt Binder Systems. To determine the optimum rubber particle size and range of rubber concentrations for acceptable viscoelastic properties, effect of asphalt source, rubber type and processing. J. C. Rosner. HRIS 31-177465 ACTIVE

(4) Sulfate Resistance of Mortars Using Fly Ash Partial Replacement of Portland Cement. To compare expansion of mortar bars subjected to 10% sodium sulfate solution and accelerated sulfate and oven drying and compressive strength of convention portland cement and mortars using 15% fly ash. R.D. Pavlovich. HRIS 32-192471 ACTIVE

(5) Utilization of Waste Boiler Ash in Highway Construction in Arizona. Testing of various available fly ashes to determine design procedures for use with portland cement. J. C. Rosner, M.K. Hamm. HRIS 34-082119 (Citations) ACTIVE

3. ARIZONA (contd)

i. City of Phoenix, Alcohol Safety Action Project: 251 West Eashington, Phoenix. 85003

(1) Alcohol Safety Action Project. To implement and evaluate a comprehensive countermeasures program to reduce the role of alcohol as a contributing factor in highway crashes. T.R. Clay, P.R. Swenson. HRIS 51-045049 ACTIVE

j. Ultrasystems, Incorporated, Dynamic Sciences Division: 1850 West Pinnacle Peak Road Phoenix, 85027

(1) National Crash Severity Study. Various random samplings of police-reported towaway accidents, depending upon severity of the accident in terms of death, hospitalization, or minor treatment of victims. HRIS 51-160041 ACTIVE

k. Arizona State University: Tempe, 85281

(1) Spatial and Temporal Resolutions of Urban Air Pollution Models for Evaluation of Transportation Strategies in Phoenix. To examine current state-of-the-art grid point models for prediction of air quality as related to the evaluation of transportation strategies. N.S. Berman, Engineering Center. HRIS 12-153438 ACTIVE

(2) Guideway Vehicle Cost Reduction. To determine if installation of more sophisticated suspension systems in rail cars and urban buses will reduce the overall cost of these transportation systems significantly. N.K. Cooperrider, Dept. of Mechanical Engineering. HRIS 53-058508 (Citations) COMPLETE

o. Sergent, Hauskins and Beckwith Engineers, Inc.: 3940 West Clarendon St., Phoenix 85019

(1) Subgrade Modulus Study for Arizona Pavements. A complete review of elastic modulus as an input parameter in pavement design procedures. G. Beckwith, R. Crossley. HRIS 24-153437 (Citations) COMPLETE

4. ARKANSAS

a. Arkansas State Highway and Transportation Department: 9500 New Benton Highway P.O. Box 2261, Little Rock, 72203

(1) Arkansas Highway Department Construction Management Research Project. Study of the management system to plan and control construction activities, covering personnel, inter-division communications, etc. W.A. Tippin, R.J. Blackwell. HRIS 11-133590 (Citations) COMPLETE

(2) Construction and Utilization of a Rapid Wear Apparatus for the Evaluation of Aggregates. The design, construction and useage of this device. S.B. Teague. HRIS 24-102043. COMPLETE

(3) Skid Research Program. To develop a skid test trailer for testing pavements in relation to construction practices, mix design and aggregate type. Teague. HRIS 24-153446 ACTIVE

(4) Stresses and Strains in ACHM Overlays of PCC Pavements. To monitor the behavior of overlays in the vicinity of the pavement joints, recording both horizontal and vertical movements. Dantin. HRIS 24-153449 ACTIVE

(5) Acquisition, Calibration and Application of a Skid Trailer. To obtain, calibrate and utilize this equipment in conjunction with the University of Arkansas. S. B. Teague. HRIS 24-106285. COMPLETE

4. ARKANSAS (contd)

b. Arkansas State Public Safety Program. 116 National Old Line Building. Little Rock. 72201

(1) Implementation and Operation of Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program. HRIS 51-038071 ACTIVE

c. Arkansas State University: State University. 72467

(1) Effects of Limited Access Highways on Outdoor Recreation. To determine these effects and establish priorities in the construction and development of limited access highways. J. Kaminardes, Dept. of Business and Economics. HRIS 15-153445 ACTIVE

(2) Investigation of the Effectiveness of Bridge Anchor Devices and Bridge Joint Compression Seals. To document the nature, severity and frequency of problems relating to deterioration, and failure of seals, anchor bolts, pier caps, and other devices, so as to improve their effectiveness. Tolbert HRIS 25-192473 ACTIVE

(3) Uses of By-products Polymeric Wastes Generated in Arkansas. To design, construct and test a converter for producing binders from waste materials. W. V. Wyatt, D. Jimmerson, College of Science. HRIS 34-081984 ACTIVE

d. University of Arkansas: Fayetteville. 72701

(1) Predicted Effects of Selected Policy and Technology Changes on the Grain Marketing System. A study of the present marketing system, with consideration of transport problems. W.R. Morrison, Dept. of Agricultural Economics and Rural Sociology. HRIS 16-083444 (Citations) ACTIVE

(2) Relationship of Local Public Financing to Needed Public Services. To develop a theoretical model of financing, with consideration of the relationship of transportation problems involved. J.M. Redfern, Agricultural Economics and Rural Sociology. HRIS 16-195935 (Citations) ACTIVE

(3) The Effects of a Channel Relocation Project on the Ecosystem of Little Sugar Creek. in Benton County. A study of the effects based on before and after studies of physical, chemical, flora and fauna characteristics. R.E. Tyler. HRIS 23-081983 COMPLETE

(4) Soil Cement Low Volume Roads in Arkansas. To determine failure causes in such roads. S.I. Thornton. HRIS 24-153448 COMPLETE

(5) Stresses and Strains in ACHM Overlays on PCC Pavements. Static and dynamic measurements of displacement and stresses in the vicinity of joints and cracks. R.C. Welch, College of Engineering HRIS 24-177469 ACTIVE

(6) Evaluation of Soil Properties for Arkansas Bridge Foundations. To review recent advancements in site investigations, laboratory tests and analysis and design methods and recommend practices suited for Arkansas conditions. R.C. Welch S.I. Thornton, Dept. of Civil Engineering. HRIS 25-102998 COMPLETE

(7) Rheology of Asphalt Cements. To determine variation in chemical composition and its relation to physical properties of asphalt cements. J.R. Couper, Dept. of Civil Engineering. HRIS 31-103220. ACTIVE

(8) The Properties and Benefits of Super Water Reducers in Maintenance and Construction. To identify areas in which these reducers would be of benefit, define material properties of concretes containing the reducers, and define economic benefits. L. G. Pleimann, College of Engineering. HRIS 32-177468 ACTIVE

4. ARKANSAS (contd)

d. (9) Construction Procedures for Soil Stabilization with Self-Hardening Fly-Ash. To find methods of minimizing loss of effectiveness of fly ash as a stabilizing agent caused by delayed compaction. S.I. Thornton. D.G. Parker. HRIS 33-153442 ACTIVE

(10) Permeability of Fly Ash and Fly Ash Stabilized Soils. To determine the permeability and evaluate implications on frost heave, durability and quantity of ground water seepage. S.I. Thornton. D.G. Parker, Dept. of Civil Engineering. HRIS 34-133592 COMPLETE

(11) Environmental Aspects of Brine Usage for Highway Purposes. To evaluate the effectiveness and environmental aspects of using chloride brine for dust palliation, deicing and soil stabilization. R.C. Welch. J.W. Moore, College of Engineering. HRIS 40-133591 COMPLETE

(12) Benefit-Cost Analysis for Arkansas Traffic Records and Highway Safety Program. To develop the procedures and softwear for the annual safety reporting and analysis program requirements. R. T. Alquire, Civil Engineering Dept. HRIS 51-192474 ACTIVE

(13) Program Management Plan for the Development of the Arkansas Traffic Records and Highway Safety Analysis System. To establish a Programmed Management Plan (PMP) for the Traffic Records Highway Safety Analysis (TRHSA) System. R. T. Alquire, R. R. Safford, Civil Engineering Department. HIRS 51-192475 ACTIVE

(14) Services for Problem Drivers. To provide for coordination, planning and minimal emergency treatment services to assist clients in the Pulaski County Alcohol Safety Action Program. F.A. Morrow, R.J. First, School of Social Work. HRIS 52-107374 ACTIVE

(15) Evaluation of Rapid Pile Load Tests. An evaluation of existing procedures and to develop a rapid test method that will yield information comparable to that from conventional tests. R.C. Welch, Dept. of Civil Engineering. HRIS 62-109526 COMPLETE

(16) Slope Stability Study. To develop improved design and maintenance criteria for embankments of recent alluvium in Eastern Arkansas. Lefevre. HRIS 62-153447 COMPLETE

f. University of Arkansas: Little Rock, 72204

(1) Effects of Interstate 630 and East Belt Freeway Right-of-Way Acquisitions on Pulaski County Relocatees. To identify and analyze experiences and attitudes resulting from relocation of families, individuals and businesses. Buffalo. HRIS 15-192476 ACTIVE

5. CALIFORNIA

a. California Department of Transportation: P.O. Box 1499, Sacramento, 95819

(1) Development of a Pavement Management System for Ramps, Branch Connections and Auxiliary Lanes. To develop a practical computerized system, evaluation criteria and decision logic and test it. Wilson. HRIS 11-192486 ACTIVE

(2) Establish Criteria for Rehabilitation of California Pavements. To Establish a new maintenance rating system that will allow for scheduling overlay or seal coat repairs prior to complete failures. D.L. Spellman, J.A. Matthews, B. D. Murray, C.A. Curtis, Transportation Laboratory. HRIS 11-102051 ACTIVE

5. CALIFORNIA (contd)

a. (3) San Diego - Los Angeles Corridor Study. To investigate transportation alternatives and identify economic, social and environmental impacts of each. S. Darwin HRIS 12-135358 ACTIVE

(4) Air Monitoring Quality Assurance Program. To develop a program involving the standardization of laboratory and field audit and calibration procedures. certification criteria and statistical quality assurance procedures. Sunquist, Transportation Laboratory. HRIS 17-153460 ACTIVE

(5) CALTRANS Noise Manual. To prepare and publish a noise study reference manual. M. Hatano, Transportation Laboratory. HRIS 17-192484 ACTIVE

(6) Implementation Package for Water Pollution Control. To develop a series of slide and cassette tapes to present information on the environmental program for water quality control. R.B. Howell, Transportation Laboratory. HRIS 17-192497 ACTIVE

(7) Influence of Highway Deicing Agents on Aquatic Environment. A study of the effects on the physical structure of the aquatic ecosystem of road salts in the Lake Tahoe area. E.C. Shirley, G.R. Wunters, Transportation Laboratory. HRIS 17-135346 (Citations) COMPLETE

(8) Natural Environmental Hazards and Their Relationships to Planning. Location and Design of Transportation Facilities. To develop procedures for the analysis and description of the two-way impact relationship between natural environmental hazards and transportation projects. M.L. McCauley, Transportation Laboratory. HRIS 17-111377. ACTIVE

(9) Transportation Systems and Regional Air Quality. To develop an air and meteorological data base to validate regional photochemical models for various areas. E.C. Shirley, R.W. Bushey, B.T. Squires, K.D. Pinkerman, Transportation Laboratory. HRIS 17-082704. (Citations) ACTIVE

(10) Traffic Noise Near Highways. To determine the effects of design and environmental variables on the emanation of traffic noise. E.C. Shirley, W.A. Winter, Transportation Laboratory. HRIS 17-021438 COMPLETE

(11) Automated Plotting of Photogrammetric Data. To develop an automated mapping system using an automatic plotting machine. G.P. Katibah. S.J. Paik, Office of Geometronics. HRIS 21-100573. ACTIVE

(12) Development of Photogrammetric Testing and Evaluation Procedures. Establishment of an area with precise control points for testing photogrammetric components and systems. G. P. Katiban, R. Burns, Office of Geometronics. HRIS 21-020983 (Citations) ACTIVE

(13) Dynamic Full Scale Impact Tests on Rails and Barriers. A study on various types of rails and barriers, including developing new ones and evaluations of others. E.F. Nordlin, J.R. Stoker, R.L. Stoughton, Transportation Laboratory. HRIS 21-021450. (Citations) COMPLETE

(14) Embankment Guardrail. To develop a more objective basis for determing the need for, and locations where such should be installed. E.J. Tye, Office of Traffic Engineering. HRIS 21-100759. ACTIVE

(15) Energy Absorbing Highway Barrier Designs. To evaluate various energy absorbing concepts and develop median barriers, guardrails and obstruction deflectors. E.F. Nordlin, J.R. Stoker, R.L. Stoughton, Transportation Laboratory. HRIS 21-021183. (Citations) COMPLETE

5. CALIFORNIA (contd)

a. (16) Evaluation of a Multi-sensor, Airborne Geophysical System. To determine the value of the Barringer multi-sensor system in determining geological conditions for highway design. M.L. McCauley, B.W. Works, Transportation Laboratory. HRIS 21-100578 COMPLETE

(17) Feasibility of a Highway Crossing System for Desert Tortoises. To evaluate the effectiveness of mesh fences as barriers to direct the movement of tortoises, and to study culverts as a means of permitting safe crossing of the highway which bisects the home range of the tortoise. S.G. Ford, Office of Environmental Planning. HRIS 21-192494. ACTIVE

(18) Oxidant Residual and Influx in Regional Air Quality Modeling. Develop a methodology for incorporating residual and transported oxidant conditions into boundary and initial condition parameters of regional air quality photochemical models. R.W. Bushey, Transportation Laboratory. HRIS 21-177485 COMPLETE

(19) Validation of the Caline-2 Model using other Data Bases. Aeromatic data from other near-roadway air pollution research studies to be used to further validate the model for carbon monoxide. R.W. Bushey, Transportation Laboratory. HRIS 21-177487 ACTIVE

(20) Cooperative Field Survey of 40 to 60 Aluminum Culverts. To ascertain the future use of aluminum as alternative culvert material for highway cross drainage. D. L. Spelman, F.A. Myhres, Transportation Laboratory. HRIS 22-192485 ACTIVE

(21) Determination of Load Carrying Capability of 18 Inch and 24 Inch Diameter Slotted Corrugated Steel Pipe. Evaluation of current designs, modify standards to provide for carrying heavier loads, and determine methods of repair to upgrade existing installations. J.R. Stoker, J.P. Dusel, Jr., Transportation Laboratory. HRIS 22-135316. ACTIVE

(22) Infiltration Drainage of Highway Surface Water. To establish design criteria for disposal of water from surface runoff by infiltration within the highway right-of-way. R.A. Forsyth, J.B. Hannon, K.A. Jackura, Transportation Laboratory. HRIS 22-101022 ACTIVE

(23) Modelling Transporation Pavement Runoff. To develop a model for estimating concentrations of selected constituents in storm runoff. R.B. Howell, Transportation Laboratory. HRIS 22-192504. ACTIVE

(24) Proof Testing of a Structural Plate Pipe with Varying Bedding and Backfill Parameters. Testing of a grossly under-designed, flexible, corrugated, structural plate pipe buried in a deep embankment with a variety of bedding and backfill parameters, with stresses, strains and displacements measured. R.E. Davis, Office of Structures Design. HRIS 22-101020. ACTIVE

(25) Rigid Pipe Culvert Study. Study of the effects on structural behavior of a reinforced concrete pipe under a highway fill with a number of bedding and backfill conditions. R.E. Davis, A.E. Bacher, Office of Structures Design. HRIS 22-021195 COMPLETE

(26) Rigid Pipe Proof Testing under Excess Overfills using Varying Backfill Conditions. Study of a dummy concrete culvert under a 186 foot embankment with various beddings and backfill parameters. R.E. Davis, A.E. Bacher, Office of Structures Design. HRIS 22-101049 ACTIVE

5. CALIFORNIA (contd)

a. (27) Water Pollution Aspects of Particles which Collect on Highway Surfaces. To determine the physical, chemical and biological nature of constitutents of highway surface runoff. E.C. Shirley, R.B. Howell, Transportation Laboratory. HRIS 22-101072 (Citations) ACTIVE

(28) Water Quality Aspects of Highway Runoff for Wildlife Use. To monitor the effect of a mixture of runoff water and other water on the wildlife population drinking from a drinking basin. S.G. Ford, Office of Environmental Planning. HRIS 22-192512 ACTIVE

(29) Irrigation System Study. An evaluation and study of new equipment and methods for irrigation systems for horticulture needs and water conservation. E. F. Nordlin, J.R. Stoker, R.L. Donner, R.A. Pelkey, Office of Landscape Architecture. HRIS 23-101179 ACTIVE

(30) Application of Radio-location Telemetry in Monitoring Deer Movements Adjacent to Highways. To provide information on the specific behavioral characteristics of deer in the vicinity of highways, so as to develop methods to mitigate the killing of deer. S. G. Ford, Office of Environmental Planning. HRIS 23-135305. ACTIVE

(31) Disposal of Highway Solid Wastes. To develop disposal methods of all highway associated refuse that will not affect adversely the environment. E.C. Shirley, R.B. Howell, Transportation Laboratory. HRIS 23-101224 (Citations) ACTIVE

(32) Evaluation of Erosion Control and Drainage Alteration Methods. Determine the effectiveness of such measures as use of willow wattling, willow cuttings, revegetation and use of sediment basins. Howell. HRIS 23-192490 ACTIVE

(33) Evaluation of Highway Deer Kill Mitigation. Determination of the effectiveness of such measures as undercrossings, exclusion fencing, and one-way deer gates. S.G. Ford, Office of Environmental Planning. HRIS 23-135331 ACTIVE

(34) Evaluation of Noise Barriers. Determine noise attenuation and cost effectiveness of barriers made of different materials and check current design methods. M. Hatano, Transportation Laboratory. HRIS 23-192491. ACTIVE

(35) Implementation Package for Noise Pollution. To prepare a 15-minute film on noise pollution for showing at public hearings on noise barrier construction. M. Hatano, Transportation Laboratory. HRIS 23-192496 ACTIVE

(36) Insulation of Buildings to Attenuate Noise. Determine the feasibility of insulating buildings to mitigate traffic noise. M. Hatano, Transportation Laboratory. HRIS 23-192498 ACTIVE

(37) Long Range Effect on Aquatic Ecosystems from Adjacent Highway Construction. A study of these effects and the evaluation of mitigation techniques employed to minimize the impacts. E.C. Shirley, G.R. Winters, Transportation Laboratory. HRIS 23-135364 ACTIVE

(38) Mitigation of Highway Related Chemical Water Quality. Evaluation of mitigation alternatives for highway runoff chemicals and develop guidelines for incorporating alternatives into design and maintenance procedures. Howell. HRIS 23-192503 ACTIVE

(39) Noise Measurements and Quality Assurance. Develop procedures that will insure that measurement equipment is correctly calibrated, and check on techniques for field use of the instruments. E.C. Shirley, M.M. Hatano, Transportation Laboratory. HRIS 23-177484 ACTIVE

5. CALIFORNIA (contd)

a. (40) A Study of the Influence of Highway Erosion Sediments and Water Bourne Materials from Roadway Surfaces on Aquatic Flora. To determine the effects on the productivity rates of aquatic flora. G.R. Winters, E.C. Shirley, R.B. Howell, Transportation Laboratory. HRIS 23-101223 ACTIVE

(41) Temporary Erosion Control Methods. To develop a test method for use in the laboratory for rating temporary erosion control products considered for use in treating highway slopes. R.A. Forsyth, R.H. Prysock, Transportation Laboratory. HRIS 23-135365 ACTIVE

(42) Analysis of Full Depth AC Pavements by the Layered Elastic Theory Method. To determine the ability of theory to predict in-service pavement responses. R. N. Doty, G.W. Mann, Transportation Laboratory. HRIS 24-020971 (Citations) COMPLETE

(43) Development of Methods to Control Pavement Faulting. To establish guidelines that will minimize occurrence of faulting in pcc pavements. J.H. Woodstrom, B.F. Neal, Transportation Laboratory. HRIS 24-153485 ACTIVE

(44) Evaluation and Calibration of Road Meter Devices for Measuring Pavement Rideability. To develop a device capable of measuring and recording road roughness with accuracy and repeatability. F. Boucher, B. Neal, Office of Highway Maintenance. HRIS 24-153495 ACTIVE

(45) Evaluation of Petromat Test Installations Placed as Category II Experimental Construction (Type B Study). Field monitoring evaluation of performance of this material. D.L. Spellman, J.A. Matthews, Transportation Laboratory. HRIS 24-177481. ACTIVE

(46) An Evaluation of the Current California Method to Determine AC Overlay Thickness. An evaluation based on performance of overlays placed during the last 15 years. D.L. Spellman, J.A. Matthews, Transportation Laboratory. HRIS 24-177476. ACTIVE

(47) Factors Affecting the Durability of Concrete Bridge Decks. To control the variables in bridge construction to determine which eliminate or prevent rapid deterioration or spalling of bridge decks. B.H. Nelson, Office of Structured Design. HRIS 24-153501 (Citations) ACTIVE

(48) Follow-up Study of Resilience Design Method. To establish maximum design resilience values for various elements of structural sections. J.B. Skog, J.A. Matthews, R.W. Bushey, D.V. Roberts, Transportation Laboratory. HRIS 24-021197 (Citations) COMPLETE

(49) Highway Structure Approaches. To establish a quantitative value of the approach pavement problem. B.H. Nelson, T.J. Bezouska, Office of Structures Design. HRIS 24-101477. (Citations) ACTIVE

(50) Improve Portland Cement Concrete Wearing Surfaces. To determine the effects that construction techniques and materials have on the production of durable textured concrete surfaces resulting in enduring skid resistance. D.L. Spellman S.N. Bailey, J.H. Woodstrom, L.S. Spickelmire, Transportation Laboratory. HRIS 24-102045. (Citations) COMPLETE

(51) Lime-Treated Roadways. An evaluation of lime-treated roads in California, in both field and laboratory studies. R.N. Doty, M.L. Alexander, Transportation Laboratory. HRIS 24-021201 (Citations) COMPLETE

(52) Pavement Failure Study. A cooperative study with the Portland Cement Association of existing pavements where faulting has occured. D.L. Spellman, J.H. Woodstrom, B.F. Neal, Transportation Laboratory. HRIS 24-021189 (Citations) COMPLETE

5. CALIFORNIA (contd)

a. (53) PCC Pavement Performance. Establishment of a rating system for existing concrete pavements as well as some new projects, noting roughness and other factors related to performance. D.L. Spellman, J.H. Woodstrom, B.F. Neal, Transportation Laboratory. HRIS 24-102014 (Citations) COMPLETE

(54) Performance of Experimental PCC Pavement Sections. Evaluation of various experimental variables to determine which can best improve serviceability of future pavements. D.L. Spellman, B.F. Neal, L.S. Spickelmire, J.H. Woodstrom, Transportation Laboratory. HRIS 24-020239 (Citations) ACTIVE

(55) Revision of California Structural Section Design Methods. To develop a more generalized design framework to accommodate future refinements in designs. R.H. Doty, K.L. Baumeister, Transportation Laboratory. HRIS 24-082707. (Citations) COMPLETE

(56) Statewide Flexible Pavement Performance and Deflection Study. To study the relationship between tolerable deflections, structural section and traffic, with consideration of the material qualities and characteristics influencing performance. D.L. Spellman, J.A. Matthews, G.W. Mann, Transportation Laboratory. HRIS 24-021196 (Citations) ACTIVE

(57) Bridge Deck Drains. Evaluation of these drains and the effectiveness of existing internal flushing systems, with suggested new approaches to the problem. T.J. Bezouska, I.R. Aarset, D.B. Jennings, Office of Structures Design. HRIS 25-102958. ACTIVE

(58) Development of a Box Girder Load Distribution Formula. To develop such a formula, for computerized analyses. R.E. Davis, F.R. Alves, Office of Structures Design. HRIS 25-135320 ACTIVE

(59) Development of an Anchorage Scheme for a Type 25 Concrete Bridge Barrier Rail Replacement System. Static testing of the system that will withstand severe passenger car impacts. J.R. Stoker, J.P. Dusel, Transportation Laboratory. HRIS 25-153484 ACTIVE

(60) Dynamic Response of Bridges to Seismically Induced Ground Vibrations. To assess the dynamic response of structures to given input motions, comparing theoretical with actual measurements. R.E. Davis, J.H. Gates, Office of Structures Design. HRIS 25-102895 (Citations) COMPLETE

(61) Dynamic Response of Bridges to Seismically Induced Ground Vibrations - Phase 2, Monitoring and Maintenance. To train personnel in methods of maintenance and monitoring of accelerographs installed on structures during the first phase of the study. R.E. Davis, Office of Structures Design. HRIS 25-135328 ACTIVE

(62) Evaluation of Rock Anchors for Installation in Existing Concrete Structures. An investigation of various rock bolt anchorage systems for installing signs, light standards or other devices on existing concrete bridges. J.R. Stoker, J. P. Dusel, Jr., Transportation Laboratory. HRIS 25-098034 ACTIVE

(63) An Evaluation of the Effectiveness of Cathodic Protection Applied to Seven Bridge Decks. A determination of the effectiveness of this type of protection for steel reinforcing. P.J. Jurach, Office of Structures Design. HRIS 25-098042 ACTIVE

(64) Fatigue Characteristics of A-307 and A-325 Bolts. To establish the endurance limits of the bolts used for anchoring lighting standards and overhead sign structures. J.R. Stoker, J.P. Dusel, Jr., Transportation Laboratory. HRIS 25-135335 ACTIVE

5. CALIFORNIA (contd)

a. (65) Field Verification of Column Creep. To determine if column moments caused by prestress shortening of the superstructure reduce with time. T. J. Bezouska, J.B. Poppe, Office of Structures Design. HRIS 25-103010. (Citations) ACTIVE

(66) Field Verification of Prestressing Steel Stress Losses - Engineering. To determine losses due to shrinkage and plastic shortening of the concrete and relaxation of the prestressing steel. T.J. Bezouska, Office of Structures Design. HRIS 25-102856 (Citations) ACTIVE

(67) Long Continuous Structures without Expansion Joints. A study of the total movement of long structures without expansion joints, comparing actual with theoretical, and noting damage due to the movement, and compare overall maintenance costs with shorter and hinged structures. J.B. Poppe, Office of Structures Design. HRIS 25-102897 (Citations) ACTIVE

(68) Long Span Bridge Deflection Study. To determine deflections on existing bridges to obtain data on which to predict deflections as influenced by construction methods, sequences and materials. J. B. Poppe, B. H. Nelson, Office of Structures Design. HRIS 25-021389 ACTIVE

(69) Soil Pressure and Stresses on Wood Face and Steel Mats of Bar-Mat Anchored Bulkheads. J. B. Hannon, J.C. Chang, Transportation Laboratory. HRIS 25-192509 ACTIVE

(70) Structural Behavior of a Skewed, Prestressed Concrete Railroad Through Structure. Study of stresses due to temperature differentials, prestressing, creep and dead load on a round-the-clock basis during pouring, and under live loads. R.E. Davis, Office of Structures Design. HRIS 25-102894 ACTIVE

(71) Vehicular Crash Tests on Continuous Concrete Median Barriers without Footings. To determine the strength and stability of safety-shaped barriers. J.R. Stoker, R.L. Stoughton, Transportation Laboratory. HRIS 25-153550 (Citations) COMPLETE

(72) Vehicular Crash Tests on Precast Concrete Median Barriers. To determine strength and stability of precast safety-shaped barriers with corrugated concrete shear key joints for both temporary and permanent median barrier. J.R. Stoker, R.L. Stoughton, Transportation Laboratory. HRIS 25-153551 (Citations) COMPLETE

(73) Vehicular Impact Tests of Breakaway Wood Post and Timber Pole Sign Supports. To conduct impact tests on the largest breakaway wood posts and timber poles used for two-post signs. E.F. Nordlin, J.R. Stoker, Transportation Laboratory. HRIS 25-177488 ACTIVE

(74) Verification of Dynamic Modeling by Prototype Excitations. To record frequencies, mode shapes and damping of structures subjected to low level horizontal excitation and compare results with theoretical dynamic analysis. J. H. Gates, Office of Structures Design. HRIS 25-192511 ACTIVE

(75) Videotape Monitoring of Impact Energy Attenuators - Phase II. To optimize the use attenuators by videotaping actual field impacts, study secondary effects, restoration problems and analyze television as a tool for studying other problem areas. P. Geib, Office of Traffic Engineering. HRIS 25-135371 ACTIVE

(76) Wind Loading on Falsework. The use of a wind tunnel to assess feasibility of using the state-of-the-art imaging and systems. C. Carl, Office of Structures Design. HRIS 25-153555 COMPLETE

5. CALIFORNIA (contd)

a. (77) An Investigation of the Effectiveness of Asphalt Durability Tests. To determine the ability of various laboratory tests to measure asphalt durability, and if a useful critical void content range can be related to pavement environments and to asphalt durability. G.R. Kemp, R.N. Doty, Transportation Laboratory. HRIS 31-105121 (Citations) ACTIVE

(78) Laboratory Evaluation of AC Reflection Crack Retarders. Use of such tests as fatigue, shear, ultimate strength, creep and /or resilience to determine upon a procedure for laboratory use in evaluating retarders. J.A. Matthews, B.D. Murray, Transportation Laboratory. HRIS 31-192500 ACTIVE

(79) Recycling Asphalt Concrete. To evaluate several methods available for recycling this material for subsequent use in roadway structural sections. R.N. Doty, T. Scrimsher, Transportation Laboratory. HRIS 31-153530. ACTIVE

(80) Concrete Creep Study. To determine the amount of camber put into concrete structural members to compensate for deflections and movements due to elastic deformation, drying shrinkage and creep. D.L. Spellman, J.H. Woodstrom, S.N. Bailey, Transportation Laboratory. HRIS 32-021212 (Citations) COMPLETE

(81) Corrosion Control of Steel in Concrete. To establish more effective corrosion control of mild and high strength steels used for prestressing in concrete. D.L. Spellman, R.F. Stratfull, Transportation Laboratory. HRIS 32-020598 (Citations) COMPLETE

(82) Corrosion of Steel in Concrete. A study of various variables involved in this problem, such as admixtures, water cement ratio, aggregate, cement factor, depth of cover, etc. D.L. Spellman, R.F. Stratfull, P.J. Jurach, Transportation Laboratory. HRIS 32-021198 (Citations) COMPLETE

(83) Field Evaluation of Internally Sealed Concrete. An investigation of the use of wax beads as an admixture in the concrete. D.L. Spellman, J.H. Woodstrom, Transportation Laboratory. HRIS 32-135336 ACTIVE

(84) Post-Cast Headers at Highway Structure Expansion Joints. An investigation and evaluation of new fast-setting materials for use as post-cast header material. J.B. Poppe, I.R. Aarset, Office of Structures Design. HRIS 32-153527. (Citations) ACTIVE

(85) Asphalt Concrete Compaction Study. To modify specifications for AC compaction to accommodate vibratory compactors and the compaction of thin lifts. R.N. Doty, Transportation Laboratory. HRIS 33-192483 ACTIVE

(86) Calculating Earthwork Factors Using Seismic Velocities. To correlate seismic velocities with earthwork factors in a variety of rock types and verify that information obtained in other studies is valid in similar rock found in other locations. E.E. Stephens, Transportation Laboratory. HRIS 33-098038 (Citations) ACTIVE

(87) Influence of Highways on Water Quality. To determine water quality before, during and after construction and maintenance operations, as a means of predicting environmental impacts. E.C. Shirley, R.B. Howell, Transportation Laboratory. HRIS 33-104633 ACTIVE

(88) Measurement and Control of Air Pollution Produced by Highway Construction Operations and Related Industries. To develop test methods and specifications for control of all forms of air pollution from various types of highway construction. E. C. Shirley, R.W. Bushey, K.O. Pinkerman. HRIS 33-104632 ACTIVE

5. CALIFORNIA (contd)

a. (89) New Asphalt Concrete Compaction Study. To modify specifications for AC compaction to accommodate vibratory compactors and the compaction of thin lifts. R.N. Doty. HRIS 33-192505 ACTIVE

(90) Automatic Impact Compaction Apparatus. To develop a mechanical compactor for laboratory use in determining maximum density and replace a hand-operated device now used. R.A. Forsyth, J.B. Hannan, B.L. Lister, Transportation Laboratory. HRIS 34-020988 (Citations) COMPLETE

(91) Binder Modifier Agents for Construction and Maintenance. Field tests to determine the relative merits of agents used as construction and maintenance seals under various climatic conditions. R.N. Doty, G.R. Kemp, Transportation Laboratory. HRIS 34-103620 (Citations) ACTIVE

(92) Calibration Standards for Nuclear Gages. To develop purchase specifications for nuclear gages. R. A. Forsyth, J. B. Hannan, J.C. Chang, Transportation Laboratory. HRIS 34-021561 (Citations) COMPLETE

(93) Coatings, Sealants and Pavement Marking Materials. To develop paints, and other marking materials, considering economy, durability, safety, ecology and with a minimum of inconvenience to the public when being applied. D. L. Spellman, T.L. Shelly, Transportation Laboratory. HRIS 34-020979 (Citations) COMPLETE

(94) Control of Slope Erosion using Fiberglass Roving with Vegetation (Type B Study). To test the effectiveness of fiberglass roving over seeded and fertilized slopes on a variety of soil types and climatological conditions for erosion control. E. C. Shirley, R.B. Howell, Transportation Laboratory. HRIS 34-177477 ACTIVE

(95) Corrosion of Steel Piles. Investigation of the effect of San Francisco Bay environment on steel piles, methods of arresting the corrosion or limiting it. D.L. Spellman, R.F. Stratfull, F. R. Shoemaker, Toll Bridge Office District 04. HRIS 34-105052 ACTIVE

(96) Develop and Evaluate a Substitute for Chrome Yellow in Yellow Traffic Line Stripes. Investigation in both field and laboratory for a substitute yellow pigment. T.L. Shelly, D.R. Chatto, Transportation Laboratory. HRIS 34-153480. (Citations) COMPLETE

(97) Develop and Evaluate Alternate Cathodic Protection Systems. To provide alternate cost effective cathodic systems. D.L. Spellman, Transportation Laboratory. HRIS 34-153481 ACTIVE

(98) Development of the Use of X-ray and Other Analytical Methods for Environmental and Selected Material Analysis Applications. To develop and improve instrumental methods for identification and analysis of materials, utilizing such methods as x-ray diffraction and emission spectrometry, atomic absorption spectrometry and infrared spectrometry. T.L. Shelly, R.W. Ford, Chapman, Transportation Laboratory. HRIS 34-135324 ACTIVE

(99) The Effect of Coatings in Faying Surfaces of High Strength Bolted Joints. To determine the feasibility of coating the faying surfaces of friction-type bolted connections with a corrosion inhibiting coating. E.F. Nordlin, J.R. Stoker, J.P. Dusel, Jr., Transportation Laboratory. HRIS 34-105051. (Citations) COMPLETE

(100) Formulation and Evaluation of New Adhesives for Highway Use. Evaluation of adhesives developed by the laboratory as well as those submitted by industry, for such uses as bonding traffic markers to pavements, binding new and old concrete, etc. E.C. Shirley, T.L. Shelly, Transportation Laboratory. HRIS 34-020083 (Citations) ACTIVE

5. CALIFORNIA (contd)

a. (101) Fracture Toughness of Low Strength Structural Grade Bridge Steels. An investigation of the effect of metallurgical grain refinement and the effects of loading rate on fracture toughness. E.F. Nordlin, W.F. Crozier, C.B. Kendrick, Transportation Laboratory. HRIS 34-105088. (Citations) ACTIVE

(102) Improved Nuclear Gage Development. To develop an improved nuclear density-moisture device for maintaining control of earthwork under high volume construction procedures. R.A. Forsyth, J.B. Hannon, J. Chang, B.L. Lister, Transportation Laboratory. HRIS 34-020101 (Citations) ACTIVE

(103) Improvement of the Performance of Zinc Rich Primer. To improve the organic zinc rich specification so that a primer with consistently good performance can be provided. T.L. Shelly, R. Warness, Transportation Laboratory. HRIS 34-153512 (Citations) COMPLETE

(104) Investigate Alternatives for Solvent Based Traffic Paints. To evaluate these paints in terms of suitability and ability to comply with air pollution regulations T.L. Shelly, D.R. Chatlo, Transportation Laboratory. HRIS 34-192499 ACTIVE

(105) Low Heat, Rapid Drying Traffic Paint with Improved Bead Retention. To develop and evaluate traffic line paint systems which will require minimum of heat to reach no-tracking state on the road in one minute and retain beads for nighttime delineation for the service life of the paint. T.L. Shelly, D.R. Chatto, Transportation Laboratory. HRIS 34-135348 ACTIVE

(106) Precision of Testing Methods. Develop procedures for determining precision statements of repeatability and reproducibility, laboratory calibration assurance program and contract control test methods. W.H. Ames, C.R. Sundquist, P.E. Benson, Transportation Laboratory. HRIS 34-020240 (Citations) COMPLETE

(107) Specification Expansion for Fabric Type Filters. To expand existing specifications for non-woven filter fabric. R.H. Prysock, T.P. Hoover, Transportation Laboratory. HRIS 34-192510 ACTIVE

(108) Water Base Coatings for Protection of Steel Structures. To formulate and evaluate various types of water base coatings for use over zinc primer, as well as a complete water base primer and topcoat system, that would be equal to alkyd type maintenance paints. T.L. Shelly, R. Warness, Transportation Laboratory HRIS 34-153552. ACTIVE

(109) Water Holding Capacity for Hydromulch Fiber. To determine a reliable, repeatable method of determining water holding capacity of the fiber. Works, Hoover, Transporation Laboratory. HRIS 34-153553 (Citations) COMPLETE

(110) Welding of Intermediate and High Strength Steels. Investigations of welding procedures and certain situations in terms of propensity to result in weld cracking. E.F. Nordlin, W.F. Crozier, C.B. Kendrick, Transportation Laboratory. HRIS 34-105090. ACTIVE

(111) Improved Reproducibility of Control Tests for Soils and Aggregates. To identify the reasons for differences in test results when the same material is tested in different laboratories. D.L. Spellman, R.N. Doty, Transportation Laboratory. HRIS 35-177482 ACTIVE

(112) Investigation of the Factors that Influence the Durability of Aggregates. To develop durability tests that will replace time-consuming tests now used. D.L. Spellman, J.H. Woodstrom, S.N. Bailey, Transportation Laboratory. HRIS 35-020316 COMPLETE

5. CALIFORNIA (contd)

a. (113) Rockfall Mitigation. Based on review of present methods, prepare recommendations for improvements and issue a manual for use. M.L. McCauley, Transportation Laboratory. HRIS 40-192507. ACTIVE

(114) Bridge Deck Restoration Methods and Procedures. To determine most economical and effective methods for repairing deteriorated decks and procedures to protect against continued action. J.B. Poppe, P.J. Jurach Office of Structures Design. HRIS 40-020978. (Citations) ACTIVE

(115) Develop a Pavement Maintenance Management System. Office Highway Maintenance. HRIS 40-135317. ACTIVE

(116) Evaluation of Methods to Restore the Surface Texture of Worn Grooved Highway and Polished PCC and AC Pavements. To determine best method for improving skid resistance characteristics of such worn pavements. J.A. Matthews, B.G. Page, Transportation Laboratory. HRIS 40-135332. ACTIVE

(117) New Materials and Techniques for the Rehabilitation of Concrete Pavements. To investigate new materials and techniques for use in the repair and rehabilitation of concrete pavements, with development of alternative methods. Woodstrom. HRIS 40-192506 ACTIVE

(118) Evaluate Texturing and Grinding Equipment. To evaluate the grinding equipment other than diamond tip blades for restoring riding quality to rough pavements. J.H. Woodstrom, B.F. Neal, Transportation Laboratory. HRIS 41-177480. (Citations) COMPLETE

(119) Determine Feasible Noise Limits for Construction and Maintenance Equipment and Study Noise Reduction Methods. To develop test methods and systems for reducing noise emanations from existing types of equipment. E.C. Shirley, W.A. Winter, Transportation Laboratory. HRIS 41-105748 (Citations) COMPLETE

(120) Conventional Road Safety. To determine when it is cost effective to clean up the roadside environment. E.A. Rinde, Office of Traffic Engineering. HRIS 51-177478 ACTIVE

(121) An Evaluation of Service for the Stranded Motorist (42-Mile Loop Experimental Features - District 07). To determine if freeway phones are effective for providing service and if other means would be more cost effective. R.H. Green, Office of Transportation Operations. HRIS 51-020171. ACTIVE

(122) Median Barriers. A before and after analysis of barrier construction and reconstruction. Rinde. HRIS 51-192502. ACTIVE

(123) The Relationship of Traffic Safety and the Use of Sodium Chloride as a Deicing Agent. To determine the impact, if any, on traffic safety if deicing salts are not used. H.O. Anderson, Office of Traffic Engineering. HRIS 51-153533. ACTIVE

(124) Evaluation of Safety of Loading and Securement Hardware for Transporting Wheelchair Passengers on Transit Vehicles. To develop safety guidelines for equipment used to load and secure wheelchairs, develop the equipment and provide educational materials for users and operators. C. Stewart. HRIS 53-059864. ACTIVE

(125) Detection Devices to Optimize Computerized Traffic Control. Review pertinent literature and evaluate any new devices, and develop others if these are not acceptable. W.H. Ames, R.L. Donner, Transportation Laboratory. HRIS 54-107975. ACTIVE

5. CALIFORNIA (contd)

a. (126) Development of Test Methods and Specifications for Highway Traffic Control Devices. To develop the information needed for the production of test methods and specifications for traffic signal control equipment. W.H. Ames, R.L. Donner, K.S. Sedrakian, Transportation Laboratory. HRIS 54-021187 COMPLETE

(127) An Evaluation of an Effective Warning and Information System for the Motorist (42-Mile Loop Experimental Features - District 07). An evaluation of each type of communication media in terms of its effect on delay, accidents and aggravation. R.H. Green, Office of Transportation Operations. HRIS 54-107926. COMPLETE

(128) An Evaluation of Data Communication Technology for Centralized Traffic Control Systems. Evaluation of Existing methods in this field and develop guidelines for selection and interfacing of data communication equipment with traffic control applications. R. L. Donner, B. C. Fong, Transportation Laboratory. HRIS 54-192489 ACTIVE

(129) Dynamic Measurements of Commercial Highway Vehicles. To plan, develop and install an operational, automatic truck screening facility. W. H. Ames, R. L. Donner, L.E. Welsh, Transportation Laboratory. HRIS 55-107974 (Citations) COMPLETE

(130) Evaluation and Development of Traffic Data Acquisition Equipment. To evaluate commercial vehicle detection equipment, extend capabilities, develop dynamic weighing devices and adapt new or superior equipment and techniques. W. H. Ames, R.L. Donner, Transportation Laboratory. HRIS 55-108234. (Citations) COMPLETE

(131) Evaluation of Off-ramp Surveillance. To develop methods and devices to reduce wrong-way movements on ramps. E. A. Rinde, Office of Traffic Engineering. HRIS 55-108180. (Citations) ACTIVE

(132) Truck Speed on Grades in California. To determine the speeds of trucks and selected recreational vehicles on sustained uphill grades. P. Ching, Office of Transportation Operations. HRIS 55-153547 ACTIVE

(133) In-Situ Measurement of Soil Properties. To evaluate the more recent developments in use for determining in-place soil strength, such as the Iowa Bore Hole Shear Device, Menard Pressuremeter and the Vane Shear Device. R.H. Prysock, L.R. Leech, B.P. John, Transportation Laboratory. HRIS 61-082716 ACTIVE

(134) Testing Large Soil Specimens at High Pressures. To develop equipment and testing procedures for triaxial testing of large compacted soil specimens. R.H. Prysock, Transportation Laboratory. HRIS 61-135366 ACTIVE

(135) Compaction of Cement-Treated Bases. To identify methods for compacting and trimming which produce stronger and more durable cement treated base courses. Sherman, Transportation Laboratory. HRIS 62-153474. COMPLETE

(136) Continue Monitoring of the Field Instrumentation in the Reinforced Earth Fill. To study the long-term performance of a reinforced earth fill under long term loading conditions. R.A. Forsyth, J.B. Hannon, Transportation Laboratory. HRIS 62-135312 (Citations) ACTIVE

(137) Determination of Strength Equivalency Factors for the Design of Lime-Stabilized Roadways. To develop an improved procedure for assigning appropriate gravel factors for design of lime-stabilized roadways and verify the relationship between strength after accelerated curing and the long term field curing. R.N. Doty, M.L. Alexander, Transportation Laboratory. HRIS 62-100797. ACTIVE

5. CALIFORNIA (contd)

a. (138) Dynamic Approach to Embankment Construction Control. To develop a procedure to evaluate and directly control the quality of compacted fill in terms of its elastic properties. R.A. Forsyth, J.B. Hannon, J.C. Chang, Transportation Laboratory. HRIS 62-109504 ACTIVE

(139) Earthwork Reinforcement Techniques. To construct a test section of reinforced earth in a landslide area as a correction measure, evaluating the cost and performance. R.A. Forsyth, J.B. Hannon, J.C. Chang, Transportation Laboratory. HRIS 62-029572 (Citations) COMPLETE

(140) The Effect of High Embankment Construction on Buried Artifacts. To evaluate the effects of such construction, R.A. Forsyth, Transportation Laboratory. HRIS 62-192487 ACTIVE

(141) Expansive Soil Study. To develop identification procedures for potentially expansive soils. R.N. Doty, B.D. Murray, Transportation Laboratory. HRIS 62-020987. (Citations) COMPLETE

(142) Fill Stabilization using Non-biodegradable Waste Products. To determine the feasibility of incorporating such materials in embankments for the purpose of reinforcement. R.A. Forsyth, R.H. Prysock, L.R. Leech, Transportation Laboratory. HRIS 62-110084. (Citations) ACTIVE

(143) Long Term Settlement Studies Concerning Consolidation and Strength Increase of Soft Foundation Soil. To obtain rates of consolidation and strength increase in these soils for developing design and construction control procedures for embankments. R.A. Forsyth, J.B. Hannon, J. Chang, Transportation Laboratory. HRIS 62-020383. (Citations) ACTIVE

(144) Stress-Strain Relationship on Large Soil Masses. Measurements of stresses and strains in several large fills to provide for development of a finite element design program. R.A. Forsyth, J.B. Hannon, J. Chang, Transportation Laboratory. HRIS 62-020080. (Citations) COMPLETE

(145) Earthquake Induced Embankment Distress. Study of earthquake damage and determination of the mechanism involved in causing the damage, and recommend procedures for minimizing such damage in future earthquakes. R.A. Forsyth, R. H. Prysock, K.A. Jackura, Transportation Laboratory. HRIS 63-020584 ACTIVE

(146) The Effectiveness of Horizontal Drains. To analyze horizontal drains to develop better methods of predicting performance in different soils. M.L. McCauley, D. D. Smith, Transportation Laboratory. HRIS 63-153491 ACTIVE

(147) Instruments for Determining Stress-Strain in Soils. A study of various instruments available for measuring stress-strain in high embankments. R.A. Forsyth, J.B. Hannon, K.A. Jackura, Transportation Laboratory. HRIS 63-020369. (Citations) ACTIVE

(148) Long-term Settlement at Bridge Approaches Experimental Construction Project. To determine the effectiveness of longer than usual reinforced concrete approach slabs. Smith. HRIS 63-192501. ACTIVE

(149) Survey of Earth-borne Vibrations due to Highway Construction and Highway Traffic. To acquire data to be considered in planning future highway routes and for assessing vibration damage. W.H. Ames, W. Chow, Transportation Laboratory. HRIS 63-021337. (Citations) COMPLETE

5. CALIFORNIA (contd)

b. (1) Aircraft Capabilities Validation. To identify those police aircraft capabilities which have been validated by statistical analysis. R.R. White, D.H. Margroff, R.A. Bieber, Analaysis Section. HRIS 51-192513 COMPLETE

(2) Driving under the Influence (DUI) Reduction Month-December 1977. To reduce DUI caused accidents to 3% less than the number projected between December 1, 1977 and January 2, 1978, by an increased enforcement effort and public information campaign. R.A. Bieber, K.A. Durkee, K. C. Jansma, Analysis Section. HRIS 51-192514. (Citations) COMPLETE

(3) Vehicle Fires. To examine the nature, severity and frequency of motor vehicle fires. D. Margroff, J. Michetti. HRIS 51-153549 ACTIVE

(4) Fog Sign Study. To determine the effectiveness of special warning signs on vehicle speeds when driver are warned of accidents or dense fog ahead. D. Margroff, K. Shintani. HRIS 51-153503. (Citations) ACTIVE

c. California Office of Traffic Safety: P.O. Box 865, Sacramento, 95804

(1) Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program, and a means of evaluating the program. HRIS 51-038875. ACTIVE

e. California State Department of Education: 721 Capitol Mall, Sacramento, 95814

(1) Statewide Traffic Safety Education Program -- Phase II Development and Implementation Part I -- Beginning Lesson Plans. To develop, test, evaluate and distribute lesson plans on bicycle, pedestrian, motorcycle and passenger safety. L. B. Peebles. HRIS 51-083810 ACTIVE

(2) Statewide Traffic Safety Education Program, Phase II: Development and Implementation Part 2: Pilot Testing, Evaluation and Adoption of Standards. To develop testing at the appropriate age level for passenger, pedestrian, bicycle, motorcycle, alcohol and drug elements. F.G. Bennett, C. E. Burson. HRIS 51-153539. ACTIVE

f. California State Department of Motor Vehicles: P. O. Box 1828, Sacramento, 95809

(1) Audio-Visual Licensing Examination Project. To develop driver license test content related to accident avoidance. B. Sherman. HRIS 51-106539 ACTIVE

(2) Design and Evaluation of an Operational Crash Prediction Strategy. To develop this strategy for predicting impact crashes occuring between 6:00 pm and 6:00 am, considering problem driver type identification, including alcohol abuse and or age. R.E. Hagen, E. McConnell, R.L. Williams. HRIS 51-177493. ACTIVE

(3) The Effectiveness of Traffic Safety Material in Influencing the Driving Performance of the General Driving Population. To develop traffic safety materials and determine the effectiveness when mailed to drivers. J. Anderson. HRIS 51-106527. COMPLETE

(4) Effectiveness of Traffic Violator Schools and Drinking Driver Schools. To evaluate the effectiveness of these schools with subsequent driving records of the students. D.J. Kadell, S.L. Kelsey. HRIS 51-177494. ACTIVE

(5) An Evaluation of an Experimental Re-examination Program for Drivers with Major Traffic Convictions. A comparison of drivers who have been treated by the department following two major violations within three years with those with similar violation records who were not treated. D.J. Kadell, R.S. Coppin. HRIS 51-192488 ACTIVE

5. CALIFORNIA (contd)

f. (6) An Evaluation of Group Driver Improvement Methods for Negligent Drivers. To develop and evaluate the effectiveness of new Group Educational Meetings (GEM's) for problem drivers. R.M. Harano, W.C. Marsh. HRIS 51-106369 COMPLETE

(7) An Evaluation of the Effects of Not Suspending the Driving Privilege of SB-330 Program Participants. To assess the traffic safety impact of using license suspension/revocation as a countermeasure for multiple DUI offenders and requiring them to participate in a 12 month alcoholism/alcohol abuse rehabilitation program in lieu of suspension or revocation of the license. R.E. Hagen, R.L. Williams, E. McConnell, Research and Development Unit. HRIS 51-177495 (Citations) ACTIVE

(8) Fatal Accident Study. Examination of drivers involved in fatal accidents to identify variables describing those involved and a comparison with all California drivers. M.E. Garretson. HRIS 51-177496 ACTIVE

(9) Fatal and Three-Accident Reexaminations. To evaluate alternate strategies to present reexamination given to drivers involved in a fatal accident or in three accidents in a twelve month period. M. E. Garretson, M.F. Miller. HRIS 51-192493 ACTIVE

(10) Improved Motorcyclist Licensing and Testing Project. Two new licensing program will be compared with the present program for effectiveness in reducing accident rates. J. Anderson. HRIS 51-135343 ACTIVE

(11) Multivariate Analysis of Driver Accident Frequencies over a Period of 14 Years. To estimate the true accident probability of identifiable driver sub-groups and develop a more valid point system for selecting negligent and accident prone drivers. R.C. Peck, J. Kuan, M.F. Miller. HRIS 51-082677 (Citations) ACTIVE

(12) Optimization of Probation Violators Hearing Format. To develop and evaluate two new hearing formats for probation violators. R.E. Hagen, R.L. Williams. HRIS 51-177497 ACTIVE

(13) A Pilot Evaluation of a Renewal Test Waiver Program for Good and Average Drivers. To investigate the value of the written test as an education and reward device. J. Kuan, R.C. Peck, M.F. Miller. HRIS 51-106307 COMPLETE

(14) Post Licensing Control Reporting and Evaluation System. An evaluation of the Department's treatment program for negligent drivers as to effectiveness and costs. D.J. Kadell, R.C. Peck. HRIS 51-177498. (Citations) ACTIVE

(15) San Juan Driving Range Study. A comparison of the subsequent driving records as to accidents and conviction records of those who took the course and those who did not. D. Dreyer, M. Janke. HRIS 51-106417 COMPLETE

(16) The Senior Driver-Education and Identification of Attention Span Limitation. To evaluate the effects of sending a booklet on forms of transportation other than personal automobiles to drivers over the age of 60, and comparison of 12 month subsequent accident records for treated drivers as compared to those not treated. M.K. Janke, M. Ratz. HRIS 51-192508 ACTIVE

(17) A study on the Feasibility and Traffic Safety Implications of Placing Selected Negligent Operators on Probation by Mail. To determine the feasibility of the use of mail notification as compared to the hearing process. B. Sherman, S.L. Kelsey. HRIS 51-177499. (Citations) ACTIVE

g. Jet Propulsion Laboratory, California Institute of Technology: 1201 East California Boulevard, Pasadena, 91109

5. CALIFORNIA (contd)

g. (1) Advanced Composite Materials Technology for Automotive Applications. A study of the performance benefits to be obtained in the use of advanced composite materials even though the cost exceeds that of more conventional materials. G.W. Meisenholder. HRIS 34-177489. ACTIVE

(2) Automotive Applications of Microelectronic Systems. Study of the application in the automobile industry of microelectronic systems on-board. G.W. Meisenholder. HRIS 53-177490. ACTIVE

(3) Improved Otto Cycle Highway Vehicle Systems. To provide support to ERDA for their improved Otto cycle vehicle systems program. G.W. Meisenholder. HRIS 53-177204. ACTIVE

(4) Stirling Engine Program, ERDA Support. To provide support to the ERDA Stirling engine program. G.W. Meisenholder. HRIS 53-177492 ACTIVE

h. California State University: Sacramento, 95819

(1) Analytical Techniques for Safety and Performance of Subsurface Transportation Structures. A study of tunnel lining techniques, both circular and horseshoe shaped, with consideration of a system of linkage of prefabricated elements. L.H. Gabriel, Department of Civil Engineering. HRIS 25-045960. (Citations) ACTIVE

i. University of California: 419 McLaughlin Hall, Berkeley, 94720

(1) Transportation Analysis Procedures and Training for National Forest Planning. To develop transportation planning and analysis techniques for national forest settings. A. Kanafani, E. Sullivan, Institute of Transportation Studies. HRIS 11-153544. (Citations) ACTIVE

(2) The Effects of Geographical Immobility on the Unemployment and Underemployment of Low Income Area Residents. Study of the extent to which the isolation of jobseekers from available jobs exacerbates sex and racial discrimination and other factors associated with high unemployment and underemployment in the central cities. D.M. Roth, Graduate School. HRIS 11-135243. ACTIVE

(3) Administrative Study for Developing an Interregional Ski Industry Model. To develop an econometric model of travel to ski areas in California, Nevada, Utah and Southern Idaho. A. Kanafani, E. C. Sullivan, Institute of Transportation Studies. HRIS 11-177502. COMPLETE

(4) Applications of Mathematics to Transportation Studies. A study of the optimization of public transportation systems, planning of networks, schedules, facility location, and other related topics. G. F. Newell, School of Engineering. HRIS 12-177503. ACTIVE

(5) Characteristics of Mass Transit Systems. To evaluate the technical, demand, operational and economic characteristics of mass transit systems. W.S. Homberger, Institute of Transportation Studies. HRIS 12-111019 ACTIVE

(6) Urban Transportation Characteristics. The application of new methods for traffic estimation, forecasting trip generation and determining the contribution of different transportation modes. W.S. Homberger, Institution of Transportation and Traffic Engineering. HRIS 13-111021. ACTIVE

(7) Public Transportation for Rural and Small Urban Areas: A Self-Guided Planning Aid for Rational Decisions. To develop the necessary elements of a rational decision making process regarding the advisability of public transportation in a rural or small urban community. T. N. Lam, School of Engineering. HRIS 15-177513. ACTIVE

5. CALIFORNIA (contd)

1. (8) Study of the Disposal of Recreational Vehicle Toxic Wastes at Roadside Rest. To determine the effect of toxic materials in recreational vehicles on septic tank percolation field wastewater disposal systems. Jenkens. HRIS 23-192523 ACTIVE

(9) Ecology and Biological Control of Iceplant Scale, Pulvinaria, in California. An investigation of the spread of this scale, the range and survival of the host plant under various conditions, and methods of supression. G.W. Frankie, K.S. Hagen, C.S. Koehler, Campus Research Office. HRIS 23-192518 ACTIVE

(10) Structural Behavior of a Skew Two-Span Reinforced Concrete Box Girder Bridge Model. To design, construct, instrument and test a 1:2.82 scale model of a typical skew bridge. A. C. Scordelis, J.G. Bouwkamp, School of Engineering. HRIS 25-177486. (Citations) ACTIVE

(11) Seismic Behavior of Structural Components. To conduct advanced experimental and analytical studies of the behavior of structural components subject to earthquake excitation. E.P. Popov, School of Engineering. HRIS 25-179603 ACTIVE

(12) Stand-up Time of Tunnels in Squeezing Ground. To develop a fundamental understanding of the relationship between the size of an advancing tunnel face and the stand-up time in squeezing ground as well as to develop a predictive capability of that time. T.L. Brekke, Department of Civil Engineering. HRIS 25-058755. ACTIVE

(13) Non-linear Behavior of Structures. To improve the current seismic design methodology of reinforced concrete bridges through development of improved non-linear analytical procedures and design concepts. Penzien. HRIS 25-192521 ACTIVE

(14) Orthotropic Deck Plate Research. To determine the effects of static and dynamic loads together with thermal changes on the behavior of such bridges and compare theoretical analysis and experimental results. Scordelis. HRIS 25-192522. ACTIVE

(15) Evaluation and Improvement of the Energy Absorption Characteristics of Bridges under Seismic Strain. To improve the current seismic design methodology of reinforced concrete bridges through the development of improved nonlinear analytical procedures and design concepts. J. Pensien, K. M. Romstad. HRIS 25-192519 ACTIVE

(16) Analysis, Design and Behavior of Highway Bridges. To develop design parameters, criteria and procedures for highway bridges. Scordelis. HRIS 25-192515. ACTIVE

(17) Sulfate Generated Failure Mechanisms in Concrete. An investigation of the causes of concrete failure due to sulfate attack. P.K. Mehta, M. Polivka, School of Engineering. HRIS 32-153543 ACTIVE

(18) Cracking and Time Dependent Effects in Concrete Shells and Plates. To develop analysis methods to determine structural response of reinforced and prestressed concrete slabs, panels and shells through the elastic, inelastic and ultimate ranges, including the effects of cracking, material and geometric nonlinearities. A.C. Scordelis, College of Engineering. HRIS 32-192516 (Citations) ACTIVE

(19) Development of Pavement Management System. To develop, in cooperation with the State Department of Transportation, a pavement management system. C.L. Monismith. HRIS 40-177506 ACTIVE

5. CALIFORNIA (contd)

i. (20) Contact-Impact Problems. To develop capability to solve a broad class of contact-impact problems involving frictional impact effects, large deformations and as many as three dimensions. HRIS 51-160031 ACTIVE

(21) Lean Engine Combustion. To obtain an understanding of engine combustion with excess air and problems of maximizing fuel economy while maintaining acceptable emission levels. R.F. Sawyer, J.W. Daily, R. Greif, A.K. Oppenheim, Lawrence Berkeley Laboratory. HRIS 53-192520 ACTIVE

(22) Temperal Demand in Freeway Corridors. To study the use of flexible working hours as a congestion relief measure and the changes in time people travel as a result of a traffic management tactic called "temperal response to a traffic management tactic." A.D. May, Institute of Transportation Studies. HRIS 54-192525 ACTIVE

(23) Traffic Management of Dense Networks. To develop and apply measures to meet most needs of urban drivers, origin-destination of Transportation Systems Management (TSM) strategies to urban dense networks. A.D. May, Institute of Transportation Studies. HRIS 54-192526. ACTIVE

(24) Traffic Management on Freeway Corridors. To develop a freeway corridor model capable of evaluating traffic management strategies in a broad context. A. D. May, P. Jovanis, Institute of Transportation Studies. HRIS 54-177516. ACTIVE

(25) A Decision-Making Framework for Evaluation of Climbing Lanes on Two-Lane Two-Way Rural Roads. To develop a microscropic simulation model for evaluating performance of these climbing lanes, using existing models as a base. A. D. May, Institute of Transportation Studies. HRIS 54-192517. (Citations) ACTIVE

(26) Flextime on Travel Patterns. An analysis of the impact of flextime on travel patterns and habits and of the public policy implications of this work-scheduling innovation. D. Jones, Jr., Institute of Transportation Studies. HRIS 55-177508 ACTIVE

(27) The Urban Travel Demand Forecasting Project: Workshop for Travel Demand Policy Analysis. To further validate models developed in an earlier project for forecasting travel demand. D. McFadden, Institute of Transportation Studies. HRIS 55-179338. (Citations) ACTIVE

(28) Freeway Exclusive Lane Study. To develop a model for the evaluation of such lanes on the same side of the median as the unreserved lanes, and measuring such items as travel time costs, fuel consumption, operating and maintenance costs and overall performance. A.D. May, M.P. Cilliers, Institute of Transportation Studies. HRIS 55-177509. ACTIVE

(29) The Impact of the BART System of Traffic Patterns and Facilities in the Bay Area. A collect data on traffic patterns before and after the opening of BART to investigate the impact of BART on traffic flow and travel times on highways in the area and the use of parking facilities in downtown areas. W.S. Homberger, Institute of Transportation Studies. HRIS 55-111018 (Citations) COMPLETE

(30) Implementation of Traffic Simulation Models. To provide assistance to users of developed and further improved models with advice and assistance in the application. A.D. May, Institute of Transportation Studies. HRIS 55-177511. ACTIVE

(31) Stochastic Traffic Assignment Techniques. To develop improved stochastic methods for traffic assignment, and to expand their use to problems of trip generation, car-ownership, etc. C.F. Daganzo, Graduate School. HRIS 55-177514. ACTIVE

5. CALIFORNIA (contd)

j. University of California: Davis. 95616

(1) Soil Interpretations and Socio-economic Criteria for Land Use Planning. To develop data and interpretations for land use policy making and planning and evaluate alternatives to overcome soil limitations and environmental degradation. G. L. Huntington. M. J. Singer. HRIS 12-110815. ACTIVE

(2) A Bibliography on Transit System Connectivity on Urban Areas. To develop the bibliography of previous research on the theoretical and applied aspects of connectivity as a measure of system performance. T. N. Lam. Department of Civil Engineering. HRIS 12-177501 (Citations) COMPLETE

(3) Urban and Rural Environmental Quality Protection. To study processes for determining air pollution levels, develop models of various aspects of pollution, improve means for measuring pollution, study nature of particulates, etc. L. O. Myrup, Land, Air and Water Resources. HRIS 17-138386. (Citations) ACTIVE

(4) Revegetation of Disturbed Sites in the Landscape. To solve specific revegetation problems in disturbed sites in non-urban areas such as highway cuts and fills, and others. A. T. Leiser, R. W. Harris, Department of Environmental Horticulture. HRIS 23-138387 (Citations) ACTIVE

(5) Propagation and Culture of New Species of Drought Tolerant Plants for Highways. To develop techniques for propagation of both native and exotic plants that would be compatible with the roadside environment, improve esthetics and reduce maintenance. Tucker. HRIS 23-192529 ACTIVE

(6) Highway Operation and Plant Damage. To quantify salt concentrations along highway and correlate this with plant damage, and develop screening methods between and within plant species for salt tolerance. Leiser. HRIS 23-192528 ACTIVE

(7) Evaluation, Selection and Propagation of Landscape Plants for Survival Characteristics. To develop efficient methods for screening plant species for their ability to withstand and perform well under stress conditions. A. T. Leiser, R. W. Harris, J. L. Paul, Department of Environmental Horticulture. HRIS 23-138385. ACTIVE

(8) Clogging of Drain Line by Mechanical, Chemical and Biological Actions. Field tests of synthetic fibers used as envelopes for gravel in an investigation of these gravel envelopes as a function of the cohesive strength of soil. J. N. Luthin, Department of Civil Engineering. HRIS 63-192477. ACTIVE

(9) Factors Influencing the Flow of Subsoil Water in the Immediate Proximity of and Into Drainage Facilities. An examination of exit gradients into drain lines under a variety of conditions, such as spacing of perforations in the drains, diameter of drain, depth to an impermeable layer, size of gravel envelope and drain depth. HRIS 63-101040 ACTIVE

(10) Mechanism of Fast Heaving in Embankments. Study of heat transfer and mass in freezing soil to determine the transfer as a function of soil moisture content, soil unsaturated hydraulic conductivity, and thermal gradients, and develop a model to predict thermal and moisture regime. J. N. Luthin, Department of Civil Engineering. HRIS 64-192481 ACTIVE

k. University of California, Institute of Transportation Studies: Irvine., 92664

(1) The Cost of Work Rules. A study of the consequences of alternative labor work rules on the productivity of a sample of urban transit properties. C. A. Lave. HRIS 11-192530 ACTIVE

5. CALIFORNIA (contd)

k. (2) The Effect of Organization Size on Transit Productivity and Employee Satisfaction. A sample study of organizational size on employee performance and attitudes. G. J. Fielding, L.W. Porter. HRIS 11-192531 ACTIVE

(3) The Impact of Labor-Management Relations on Productivity and Efficiency in Urban Mass Transit. An investigation of the association between these relations and such measures of productivity as service efficiency, service effectiveness, employee withdrawal and adaptability. J.L. Perry. HRIS 11-192532. (Citations) ACTIVE

(4) Shared Ride Taxi as Community Public Transportation. To examine the factors affecting the viability of the shared taxi ride as community level transportation. G. J. Fielding, R. F. Teal. HRIS 12-192533. ACTIVE

l. University of California: Los Angeles, 90024

(1) Bidirectional Loading Equipment for Full Scale Subassembly Testing in Structural Engineering. To utilize this equipment in verifying analytical models currently being developed to represent the complex mechanical behavior of structural systems. L.G. Selna, School of Engineering and Applied Science. HRIS 25-177504 ACTIVE

(2) Development of a Visibility Research Capability. To determine the feasibility of developing this capability for conducting research in driver visibility that would reproduce aspects of visual environment associated with time-stressed critical driving situations yet present no hazard to the test subjects. H.W. Case, J.H. Lyman, A. Burg, School of Engineering and Applied Science. HRIS 51-153486 ACTIVE

(3) Alcohol Effects on Driving, Perception and Attention. To determine nature of alcohol induced perceptual deficits, examination of psychological processes underlaying impaired perception and interactions of such variables as age, sex, drinking history, etc, with alcohol effects. H.A. Moskowitz, M. Burns, K. Ziederman, S. Sharma, School of Letters and Science, Psychology. HRIS 51-179621 ACTIVE

(4) Stress-Strain Behavior of Cohesionless Soil During Unloading and Reloading. A study of stress-strain characteristics of cohesionless soil during unloading and reloading, and an evaluation of the procedures used. P.V. Lade, Department of Mechanics and Structures. HRIS 63-135290. ACTIVE

m. University of California: Riverside, 92521

(1) Biological Control of Snails and Slugs. To develop strategies and tactics for the control of pest mollusk populations which will reduce dependence upon amount of poison baits. T.W. Fisher. HRIS 23-177505. ACTIVE

o. University of Santa Clara, Mechanical Engineering Department: Santa Clara, 95053

(1) Alternative Fuels for Automobiles. A comparison study of methanol/gasoline blends with regular gasoline, noting emission, wear and performance. R. K. Pefley, M. McCormack, J. MacDonald. HRIS 17-192554. ACTIVE

(2) An Assessment of the End Uses of Liquid Fuels Biological Processes. To describe the end uses of liquids from biomass as energy resources, in both transportation and non-transportation sectors. P.K. Pefley, H. Adelman. HRIS 17-192555. ACTIVE

(3) Synthetic Fuels Car Feasibility Demonstration Project. To provide testing facilities for developmental and certification emission and fuel economy tests. R.K. Pefley. HRIS 17-192556. ACTIVE

5. CALIFORNIA (contd)

o. (4) Third International Symposium on Alcohol Fuels Technology. To provide an opportunity for researchers and planners throughout the world to meet and exchange ideas on alcohol fuels as alternatives to petroleum fuels. R. K. Pefley. HRIS 17-192557 ACTIVE

(5) Alcohols as Alternate Fuels in Automobile Engines and Gas Turbines. Based on experimental engines, modify engine and fuel systems to be suitable for highway vehicle operation. R.K. Pefley, L. Browning, M. McCormack. HRIS 34-177534. (Citations) ACTIVE

p. Stanford University, School of Engineering: Palo Alto, 94305

(1) Scale Modeling and Testing of Structures for Reproducing Response to Earthquake Excitation. To study the replica modeling of elastic and inelastic behavior of civil engineering structures under dynamic excitation. J. M. Gere. HRIS 25-192560 ACTIVE

(2) Design Methodology for Soft Ground Grouted Tunnels. To develop and experimentally determine a rational basis for design of these structures. G.W. Clough. HRIS 25-058758 ACTIVE

(3) Micromechanical Models for the Expansive Process in Expansive Cement Concrete. To develop a model which can predict the effects of changes in various parameters such as the particle size distribution of the various components. C.W. Richards. HRIS 32-179601 ACTIVE

(4) Dynamics of Large Systems. An investigation of the dynamics of large structural systems encountered in motion studies such as flexible space vehicles and road vehicles. T.R. Kane HRIS 53-179342 ACTIVE

s. Agbabian Associates: 250 North Nash Street, El Segundo, 90245

(1) Improved Design Procedures for Underground Structural Support Systems in Rock. To obtain improved analysis and design procedures for structural support systems of underground openings in rock, considering the influence of construction procedures and rock-support interaction. E.M. Raney. HRIS 25-179344 ACTIVE

v. Anacapa Sciences, Incorporated: 1528 Chapala Street, Santa Barbara, 93101

(1) DWI Arrest Procedures. To recommend more effective DWI arrest procedures within the context of applicable constraints and influencing factors. L.G. Summers, D. H. Harris. HRIS 51-192480. ACTIVE

(2) Identification of Specific Problems and Countermeasure Approaches to Enhance Bicycle Safety. To delineate bicycle safety problems types and use them as a basis for identifying appropriate countermeasure approaches. HRIS 51-055746. COMPLETE

(3) On-Road Detection of DWI's. To increase the effectiveness of police visual inspection techniques for detecting DWI's by identifying potentially useful clues and on-the-road procedures. HRIS 51-160336. ACTIVE

w. Automobile Club of Southern California: 2601 South Figueroa Street, Los Angeles, 90007

(1) In-Use Fuel Economy Variability Factors. To develop information regarding fuel economy variability factors by road testing 194 drivers over the same 7 mile urban test route. M.R. Appleby, L.J. Bintz, T.A. Tappenden. HRIS 53-177471 (Citations) COMPLETE

(2) Fuel Economy of California Automobiles. A survey of fuel economy data for California automobiles by using standard and modified laboratory driving tests, road tests and in-use automobile records. M.R. Appleby, L.J. Bintz, T. A. Tappenden. HRIS 53-177470. (Citations) COMPLETE

5. CALLIFORNIA (contd)

w. (3) Exhaust Emission of In-use Automobiles. To determine emissions at 4,000 and 50,000 miles on automobiles. M.R. Appleby, L.J. Bintz, T.A. Tappenden. HRIS 53-177472. (Citations) ACTIVE

(4) Safety-Related Defects (SRD) Investigations. To determine the epistance or nonepistant of potential safety-related vehicle defects. J.W. McDonald, L.J. Bintz, M.R. Appleby. HRIS 53-038833. (Citations) ACTIVE

x. Bechtel Corporation: 50 Beale Street, San Francisco, 94119

(1) Guidelines for Existing Subway Maintenance. To identify and evaluate current subway maintenance practices and problems and assess improved techniques and procedures for operations and for design process for future systems. HRIS 40-058680. COMPLETE

aa. Douglas and Associates, Incorporated; Western Division: 7765 Girard Avenue, Suite 204, Inglewood, 90301

(1) Systems Analysis of the Visibility Requirements of Passenger Car Drivers. To define visibility requirements in terms of field of view required, but also the informational needs relative to specific objects in specific driving situations, as well as considering the time restraints on the perceptual process. HRIS 52-058791. COMPLETE

(2) Critical Incident Study of Vehicle Crash Avoidance Systems. An analysis of the importance of visibility in avoiding accidents is a part of the analysis of driver performance and motor vehicle requirements. W. Burger, R. Smith. HRIS 53-134807. COMPLETE

ad. Human Factors Research, Incorporated: 6780 Cortona Drive, Goleta, 93017

(1) Peripheral Vision Training for Motor Vehicle Drivers. Study of techniques for analyzing and improving peripheral vision by training to overcome deficiencies. HRIS 52-058798 (Citations) COMPLETE

(2) A Study of Driver Visibility Requirements - Quality of Vision. To develop a device to measure objective optical correlates of visibility quality and a series of tests to relate these measures to performance under various conditions of optical degradation. J.O. Merritt, R.T. Hennessy. HRIS 52-153540 ACTIVE

(3) Wide-Angle Low Beam Shaping for Improved Roadway Illumination. To develop a low beam headlight that will provide better illumination pattern and increased visibility. C. Abrams, J.O. Merritt. HRIS 53-177521. ACTIVE

ae. Humanoid Systems; Humantics, Incorporated: 747 East 223rd Street, Carson, 90745

(1) Procurement of the Part 572 Test Dummy Flesh Parts Manufactured with Substitute (OBSH/TBPP) for Foaming Component. To determine optimum molding cycles for vinyl foam used in the anthropomorphic test dummy. S. W. Alderson. HRIS 51-177523 ACTIVE

(2) Research into Parameters of Responses on Part 572 Anthropomorphic Test Dummies to California Tests. Methods for Controlling Parameters to Establish Uniform Response. Statistical analysis of results of calibrating these dummies in order establish relationships of the several components and establish interchangability. S.W. Alderson. HRIS 51-177522 ACTIVE

5. CALIFORNIA (contd)

al. Metropolitan Transportation Commission: Hotel Claremont, Berkeley, 94705

(1) Impact of the San Francisco Bay Area Rapid Transit System on the Transportation System and Travel Behavior. To determine the characteristics and performance of the Bay Area ground transportation system (buses, streetcars, BART and automobiles), including travelers' response to and use of the system, measuring BART's influences on levels of service, travel cost, and patterns, and highway congestion. HRIS 11-153509 (Citations) ACTIVE

(2) Air Quality Models: Comparison of Two Bay Area Models, DIFKIN and LIRAQ. To evaluate the results of a comparable simulation of the two models. V. Petrites, L. Robinson. HRIS 11-153454. ACTIVE

(3) BART Impact Program, Implication for the Transportation Disadvantaged Project. To synthesize the BART's impacts on these disadvantaged, defined as ethnic minorities, handicapped and elderly. HRIS 11-153464 FUTURE

(4) BART Impact Program - Management Task. To provide staff and personnel necessary to perform required management functions for the complex and comprehensive program. G. Shank. HRIS 11-153463 (Citations) ACTIVE

(5) BART Impact Program. To provide a management service for the program, including design of technical work, procurement of professional services, interpretation and dissemination of results of technical activities. HRIS 15-059497 ACTIVE

(6) BART Impact Program, the Land Use Project. To examine the effects of BART on decisions on residential location, urban development behavior of real property market and the resultant spatial distribution of people activities and development. HRIS 15-160469. ACTIVE

(7) Public Policy Project of the BART Impact Program. A study of the contributing behavioral responses to changes and broad implications for local policy making that address the crucial issues of how the lives of people are affected by BART impacts. HRIS 15-160468. ACTIVE

am. Minicars, Incorporated: 55 Depot Road, Goleta, 93017

(1) Crash Protection Systems for Handicapped School and Transit Bus Occupants. To develop a practical crash protection system for school buses and other surface transit systems used by handicapped children and other wheel chair occupants. A. Khadilkar. HRIS 53-177528. ACTIVE

(2) Development of a Solid Propellant Inflation Technique for the Subcompact Car Passenger Restraint System. Design and evaluation of this system to be used with air cushion restraint system. P. Dill. HRIS 53-160176 ACTIVE

(3) Near Term Hybrid Vehicle Program, Phase I. Studies and analyses to recommend preliminary design and a proposal for evaluation and potential selection of an integrated test vehicle fabrication. S. Romano, D.E. Struble. HRIS 53-192549 ACTIVE

(4) Research Safety Vehicles. - Phase I. To develop, integrate and test all subsystems of a safe, efficient small car for the mid-1980's. D. Struble, D. Friedman, D. Tanner. HRIS 53-135355 COMPLETE

(5) Research Safety Vehicle - Phase II. To build and test a vehicle in accordance with performance specifications and conceptual design developed under the Phase I contract. D. Struble. HRIS 53-135356. COMPLETE

5. CALIFORNIA (contd)

am. (6) Research Safety Vehicle. Phase III. A continuation of the first two phases to develop and test safety vehicles for the mid-1980's. D. Struble. HRIS 53-160291. ACTIVE

(7) Small Car Front Seat Driver Inflatable Restraint System Evaluation. To determine that production type air cushion systems can provide a minimum of 30 mph barrier equivalent velocity to these drivers, and to develop a foam-faced knee restraint system. C. Strother. HRIS 53-160181. ACTIVE

(8) Small Car Front Seat Passenger Inflatable Restraint System Evaluation. To demonstrate that vehicles in the 2000 to 2500 weight class can comply with the passive frontal impact requirements with the installation of air cushions at the front passenger position. C. Strother, T. Zinke. HRIS 53-177529. ACTIVE

(9) Subcompact Vehicle Energy Absorbing Column Evaluation and Improvement. To establish a data base for 200 cases of the current energy-absorbing steering columns and develop a more efficient system. A. Khadilkar. HRIS 53-160029. ACTIVE

(10) Wheelchair Testing Program. To investigate crashworthiness of wheelchairs under different methods of securement on public transit buses. D. Dyne. HRIS 53-177530. ACTIVE

ao. Ralph M. Parsons Company: 617 West Seventh Street, Los Angeles. 90017

(1) Transportation Facilitation Center Concept. To consolidate the terminal operations of a number of carriers and establish a highly efficient integrated and intermodal center designed for handling and processing shipments of all sizes, shapes and weights up to 10,000 pounds. I. Blatner. HRIS 11-045246 COMPLETE

(2) Existing Air Transportation Apron-Terminal Area Complex. To collect information on existing complexes, analyze them showing advantages and disadvantages of each. HRIS 16-036323. COMPLETE

ap. Physics International Rocket Research Company: 2700 Merced Street, San Leandro. 94577

(1) Mining and Tunneling by High Speed Projectile Impact-Beam. The use of a military type gun firing 4-inch 10 pound concrete projectiles at velocities up to 6000 feet per second to excavate tunnels in hard rock. HRIS 33-104631. COMPLETE

at. City of Sacramento, 95814

(1) Geocoding -- STARS II (Sacramento Traffic Analyzing and Reporting System). To develop a more comprehensive traffic accident records system through enhancing the reporting capabilities of STARS. J.L. Puthuff, Data Processing Dept. HRIS 51-192553 FUTURE

(2) Sacramento Identification and Surveillance Traffic Accident Project. To develop a more comprehensive traffic accident identification and surveillance program. L.M. Frank. HRIS 51-153535. ACTIVE

aw. San Francisco Public Utilities Commission: 949 Presidio Avenue, San Francisco. 94115

(1) Flywheel Energy Storage Concept. To evaluate this system as a device for use in a broad range of urban ground transportation vehicles. M.R. Cohn. HRIS 53-048862. ACTIVE

5. CALIFORNIA (contd)

bc. Southern California Rapid Transit District: 425 South Main Street, Los Angeles, 90013

(1) Employment Center Subscription Service (ECSS). To field test and demonstrate the feasibility of a multi-trip subscription service within a major employment center. J. Duda, HRIS 12-177535 (Citations) ACTIVE

bd. Stanford Research Institute: 333 Ravenswood Avenue, Menlo Park, 94025

(1) Transfer of Aerospace Technology to Selected Public Sector Areas of Concern. A transfer to the transportation area of aerospace technology, including ground transportation, pollution, safety, driver education and others. T. Anyos. HRIS 12-111350 COMPLETE

(2) A Technology Assessment of Telecommunication-Transportation Interactions. To prepare a comprehensive, indepth, technology assessment of these interactions, including the possibilities for substituting communications for transportation in certain situations and the impact of such changes. R. W. Hough. HRIS 12-135295. ACTIVE

(3) Study of Future Transportation Developments. Consideration of the many parameters that may influence and determine the level and type of demand for transportation that will emerge, in the future. HRIS 15-059144 COMPLETE

(4) Satisfaction of the Automotive Fleet Fuel Demand and Its Impact on the Oil Industry. To prepare a model of the refinery industry that will show the effects gasoline, automobile distillate ratio, patterns of future supply source, demand schedules, storage and distribution systems, etc. HRIS 17-058678. ACTIVE

(5) Long-Term Energy Alternatives for Propulsion of the Automobile - Engines Based on Synthetic Fuel vs Electric Vehicles. A study of the possibilities of scarcity of petroleum requiring change to synthetic fuels or electric propulsion, and transition to one of the alternatives from the present system. E.E. Hughes. HRIS 17-135265. COMPLETE

(6) Long-Range Plan for Transportation in Kuwait, 1978-2000. To prepare a national transportation plan considering present status and future needs of all modes both passenger and freight, within the country and internationally. R. Tidwell, D. Curry, M. Roddon, S. Davenport, J. Vanzandt, R. Corbett. HRIS 12-192559. (Citations) ACTIVE

(7) BART Simulation Development Project. To develop a general computer program that provides a comprehensive simulation model of the BART operating system, including all functional entities. HRIS 12-153465. ACTIVE

(8) Characteristics of DWI Drivers: Alcohol Crash Involved, Arrested and on-the-Road. To determine if drivers arrested for DWI are an appropriate target group for potential countermeasures and identify the potential countermeasures approaches. G. Fridlund. HRIS 52-135309. COMPLETE

(9) Development of Scale Model Crash Testing Techniques. A study of crashes and means to produce more crashworthiness in future vehicles. HRIS 53-055773. ACTIVE

(10) Study of Advanced Energy Absorbing Vehicle Structures by Scale Modeling Techniques. To evaluate the scale model technique for application to automobile structures. HRIS 53-045527. ACTIVE

5. CALIFORNIA (contd)

bd. (11) Measurement and Analysis of Soil Creep of Silty Clay Soil. An investigation of the processes by which soil moves downhill at slow but irregular rates with emphasis on seasonal fluctuations in rainfall and other environmental factors. A. M. Johnson. HRIS 63-179592. ACTIVE

bf. Systems Technology Incorporated: 13766 South Hawthorne Boulevard, Hawthorne, 90250

(1) The Effects of Alcohol on the Driver's Decision Making Behavior. Determine the effects, particularly with respect to changes in subjective risk level and risk acceptance levels. R.W. Allen. HRIS 52-055762. ACTIVE

(2) Accident Avoidance Capabilities of Mopeds. To assess the capability of production mopeds to avoid accidents and to predict safety problems likely to arise from the introduction of large numbers of mopeds. J. W. Zellner. HRIS 53-177536. ACTIVE

(3) Aerodynamic Disturbance Test Procedure Development. To evaluate the aerodynamic disturbance response characteristics of a sample of vehicles and develop standardized test procedures. R.H. Klein. HRIS 53-177537. ACTIVE

(4) Car-Trailer Handling Standards Development. To identify suitable braking and handling performance requirements for passenger cars pulling trailers. R. H. Klein. HRIS 53-177538. ACTIVE

(5) Design and Fabrication of Alcohol Safety Interlock Systems. To obtain and test some twenty alcohol safety interlock systems for field effectiveness tests, particularly on cars driven by persons convicted of DWI. A.A. Blauvelt, H.R. Jex, R.A. Peters. HRIS 53-055563. ACTIVE

(6) Effects of Alcohol and Marihuana on Driver Control Behavior. A determination of the effects in particular hearing and lateral path control, and to relate these effects to critical reasons for accident causation. R.W. Allen HRIS 52-058880 ACTIVE

(7) Handling Test Procedures for Passenter Cars Pulling Trailers. To determine the allowable hitch load and load equalizing ratings based on test results; recommend improved hookup techniques. R.H. Klein, H.T. Szostak. HRIS 53-153505. (Citations) ACTIVE

(8) Influence of Aerodynamic Disturbance on Vehicle Handling. To develop realistic test equipment and procedures for assessing the safety-related response characteristics of vehicles to aerodynamic disturbances. HRIS 53-160179 ACTIVE

(9) Intermixing of Bias, Bias Belted and Radial Ply Passenger Tires. To determine the changes in vehicle dynamics and driver response characteristics when these tires are intermixed on front and rear of passenger cars. R.H. Klein, R. W. Humes. HRIS 53-058287. (Citations) ACTIVE

(10) Motorcycle Handling. Evaluation of response parameters for a sample of motorcycles, develop additional test procedures and correlate performance with subjective evaluations. D.H. Weir. HRIS 53-153522. ACTIVE

(11) Multi-Vehicle Program, Vehicles-on-Use, Sublimit Maneuvers. To apply vehicle handling degradation methods and test procedures to a spectrum of passenger automobiles configurations representative of the in-use population. D.E. Johnston. HRIS 53-177542. ACTIVE

5. CALIFORNIA (contd)

bf. (12) Power Steering Failure Study. To determine the feasibility of modifying power steering systems to prevent excessive steering effort resulting from system failure. R.H. Klein, H. T. Szostak, I. L. Ashkenas. HRIS 53-153528. (Citations) ACTIVE

(13) Solid State Data Acquisition and Processing System. To develop and test an advanced vehicle handling instrumentation system, light enough so that it could be installed on the lightest vehicle without affecting its "lightly loaded" configuration. A.A. Blauvelt. HRIS 53-135362. ACTIVE

bi. TRW, Incorporated: One Space Park, Redondo Beach. 90278

(1) Heavy-Duty Vehicle Emissions Inventory. Study of the emissions from both gasoline and diesel powered trucks and buses, which account for a growing percentage of mobile source pollution generators. K.W. Arledge. HRIS 53-153506 ACTIVE

bj. Ultrasystems, Incorporated, Irvine, 92715

(1) Optimized Brake Inspection. To develop an optimum program of brake inspection based on brake performance and/or component condition, effectiveness and frequency of inspection and equipment. HRIS 53-160096 ACTIVE

bk. VTN Consolidated, Incorporated: 2301 Campus Drive, P.O. Box C-19529, Irvine, 92713

(1) Automated Freeways. To develop a complete system of automated freeways, relevant initially to Southern California and later to the entire country. J.P. Cunliffe. HRIS 12-192564. ACTIVE

(2) San Pedro Ports Transportation Plan First Phase -- Reconnaisance Report. To prepare transportation plan for all these ports for the year 2000 to accommodate expansion and growth, and all modes of transport. J. P. Cunliffe. HRIS 12-192565 (Citations) ACTIVE

bm. Wyle Laboratories: 128 Maryland Street, El Segundo, 90245

(1) Community Noise Countermeasures Cost-Effectiveness Analysis Report. To determine how a maximum reduction in noise could be activated with minimum cost to the community. HRIS 15-153473. ACTIVE

(2) Experimental Investigation of Automobile and Light Truck Tire Noise. Tire noise measurements on 21 sets of tires, both original and replacement units, with analysis of sound level versus speed. W. Fuller, R. Brown. HRIS 53-177546 (Citations) COMPLETE

(3) Light Vehicle Noise Emission Measurement. To develop and apply data measurement procedures to a broad range of passenger cars and light trucks in use in the U.S. B. Sharp, J. Thompson, R. Brown. HRIS 53-177547. COMPLETE

bn. California Air Resources Board: 9528 Telstar Avenue, El Monte, 91731

(1) Air Resources Board Freeway Monitoring Study. To monitor pollutants associated with motor vehicles, with special attention to the effects of catalyst-equipped vehicles on ambient air. F. Bonamassa. HRIS 17-153455 ACTIVE

5. CALIFORNIA (contd)

br. Los Angeles Department of Public Works, Hydraulics Research Laboratory: 2400 Altman Street, Los Angeles, 90031

(1) Catch Basin Model Tests. To develop additional hydraulic design charts for catch basin. W. R. Naydo. HRIS 22-193299 FUTURE

bu. University of California, Lawrence Livermore Laboratory: P.O. Box Livermore, 94550

(1) The Role of Energy Storage Power Systems in Transportation. To evaluate energy storage devices that have potential for transportation applications. HRIS 90-153534 (Citations) ACTIVE

bw. University of California, Community and Organization Research Institute: Santa Barbara 93106

(1) Drunk-Driving Control -- The Effectiveness of Sanctions. An evaluation of deterrence effect of law enforcement measures in the control of drunken driving in Scandanavian Countries. H.L. Votey. HRIS 51-177507. ACTIVE

bz. Aerospace Corporation: P.O. Box 95085, Los Angeles, 90045

(1) Policies to Induce Mode Shifts on Intercity Transportation. To evaluate alternative policies that the Federal Government can implement to induce mode shifts in intercity passenger travel from energy intensive air and automobile modes, to bus and rail. HRIS 12-135275 ACTIVE

(2) Guidelines for Implementing Employment Center Bus Service. To prepare a document that will serve as guidelines for implementing this type of service by transportation planning organizations, transit operating authorities and others. HRIS 12-160007 COMPLETE

(3) Advanced Ground Systems Requirements. To determine circumstances under which advanced ground systems could be justified for meeting future short haul intercity transport needs. HRIS 12-192479. ACTIVE

(4) Evaluation of Prechamber Emission Control Devices Systems. Study of the application of such devices systems to the automotive field, the more promising concepts, attendant costs, etc. W.U. Roessler, T. Iura. HRIS 53-135248. (Citations) ACTIVE

ca. Automotive Environmental Systems, Incorporated: 7300 Bolsa Avenue, Westminster, 92683

(1) Correlation Check Vehicle. To provide an emission test vehicle which can be used to quantify and correlate vehicle emission testing laboratories. R. E. Pilkington, R. Burch. HRIS 53-177473. COMPLETE

(2) Restorative Maintenance Evaluation Project. To provide data on exhaust emissions and fuel economy performance of 1975 and 1976 model years selected to represent the national vehicle population. R. E. Pilkington, R. Burch, T. J. Runner. HRIS 53-177474 ACTIVE

cc. William M. Brobeck and Associates: 1235 Tenth Street, Berkeley, 94710

(1) Flywheel Energy Storage System. To devise a system concept adaptable by commercial industry in a storage range of 10 to 50kwh and suitable for interfacing with a smaller solar energy source. F.C. Younger. HRIS 53-192567 ACTIVE

5. CALIFORNIA (contd)

cc. (2) External Combustion Engine. To identify and describe areas necessary to enable production of such an engine for automotive use. R.A. Renner. W.M. Brobeck. F.C. Younger. HRIS 53-153499 (Citations) ACTIVE

(3) Composite Flywheel for Vehicles. To produce such a device for use in vehicles. F.C. Younger. HRIS 53-192566 ACTIVE

cg. Energy Research and Generation. Incorporated: 952 57th Street. Oakland. 94608

(1) Thermocorer for Rapid Tunneling and Excavation. To determine the feasibility of using a dynamic rock melting method for such work. G.M. Benson. HRIS 41-135296. ACTIVE

cj. General Research Corporation: 5383 Hollister Avenue. P.O. Box 6770. Santa Barbara 93105

(1) Comments on California Air Quality Standards: Transportation Control Strategy. Analysis of the Control strategy proposed by the U.S. Environmental Protection Agency to abate Southern California smog. A.Q. Eschenroeder. HRIS 17-135228 COMPLETE

(2) Electric and Hybrid Vehicle Performance and Design Goal Determination Study. To produce such goals for near-term and advanced electric and hybrid vehicles to be used by ERDA. J. Brennand. HRIS 53-153493. (Citations) COMPLETE

(3) Electric Car Impact Assessment. To assess the energy. environmental. social and economic effects which would result from extensive use of urban battery-electric in 1980. 1990. and 2000. W. Hamilton. HRIS 53-153494. ACTIVE

cl. Hydrocomp. Incorporated: 1502 Page Mill Road. Palo Alto. 94303

(1) Basin Scale Modeling of Sediment Transport. To develop and test a mathematical model capable of simulating the movement of water and sediment through the land and channel phases of the hydrological cycle. K.M. Leytham. R. C. Johanson. HRIS 22-153467. (Citations) ACTIVE

(2) Comprehensive Package for Simulation of Watershed Hydrology and Water Quality. To develop such a package for water quality and quantity processes involved in the land. channel and lake phases of the hydrological cycle. R. C. Johanson. HRIS 22-153475. ACTIVE

cn. Northrop Corporation: Electro-Mechanical Division: 500 East Orangethorpe. Anaheim. 92801

(1) Automotive Driveline Vibration Analyzer. To provide a device that will detect faulty subassemblies in truck drive shaft. differential. universal joints and wheel assemblies. P. Liebert. HRIS 53-135224. COMPLETE

cp. Ford Aeronautics Division. Aerospace and Communications Corporation: Ford Road. Newport Beach. 92663

(1) Development of Hydrogen Cyanide Monitors for Vehicle Emissions. To develop these monitors for hydrogen cyanide in exhaust emissions. D.E. Burch. HRIS 53-177519. ACTIVE

5. CALIFORNIA (contd)

cu. Science Applications, Incorporated: 1801 Avenue of the Stars, Suite 1201, Los Angeles 90067

(1) Carbon Monoxide Intrusion into the Passenger Area of Sustained-use Motor Vehicles. To develop a program to measure the CO level in these vehicles. R. Zisken. T. Carlin. HRIS 53-192558. (Citations) ACTIVE

cw. Southern California Research Institute: 2033 Pontius Avenue, Los Angeles, 90025

(1) Alcohol-Prescription Drug Interaction. To study this interaction with four drugs on a behavioral test battery. H. Moskowitz, M. Barns. HRIS 52-153456 ACTIVE

(2) In-Vehicle Tests of the Effects of Drugs on Driving Study Supplement. To examine drug effects on performance in a situation clearly related to driving and to establish the relationship between performance in a realistic situation. K. Ziedman. HRIS 52-153516. FUTURE

(3) Modifications to Driver Performance Measurement and Analysis System Data Processing Software. To review software requirements for DPMAS effective usage. K. Zeidman. HRIS 90-153520. ACTIVE

(4) Pharmacokinetics of Drug Effects on Driving Performance. To determine pharmacokinetics characteristics of nine drugs which appear as potential sources of driver performance impairment. H. Moskowitz, S. Sharma. HRIS 52-153525 ACTIVE

cx. Systan, Incorporated: 343 Second Street, Los Altos 94022

(1) Urban Transportation Tunneling Forecast. To investigate future transportation requirement of U.S. urbanized areas and estimate probable tunnel construction needed. HRIS 11-058679 ACTIVE

db. Woodward-Clyde Consultants: Three Embarcadero Center, Suite 700 San Francisco, 94111

(1) Pavement Management System, Phase III, Development of a Network Optimization System. To develop a systematic procedure for determining optimum fund allocation from a limited budget for projects in Arizona, statewide. K. Nair, G.N. Finn, R. B. Kulkarni. HRIS 11-177545. FUTURE

dg. Hoffman Information Identification, Incorporated: 4323 Arden Drive, El Monte, 91731

(1) Automatic Vehicle Location System. To provide an automatic vehicle location system for patrol force to enable police dispatcher to send closest vehicle to a request for service or assistance, and to provide for command and control. O. A. Reichardt. HRIS 51-153461 (Citations) ACTIVE

(2) Cargo Security Program. A field test of a security system involving location of and alarm transmission from 40 pickup and delivery trucks. C.C. Freeny. HRIS 51-153471 (Citations) ACTIVE

di. Kaiser Aluminum and Chemical Corporation, Center for Technology: 6177 Sunol Boulevard, Pleasanton, 94566

(1) Development of Aluminum Alloys - Automobile Applications to Reduce Vehicle Weight and Conserve Fuel. To develop suitable alloys for use in bodies and structural components of vehicles and research on joining processes for component assembly. E.J. Westerman. HRIS 34-153483 ACTIVE

5. CALIFORNIA (contd)

dj. Los Angeles County Department of Health Services, Office of Alcohol Abuse and Alcoholism.

(1) Analysis of the Drinking Diversion Programs in the County. To present policy recommendations for improvement of referral and treatment of the drinking driver. N.N. Beshai. HRIS 52- 153457. FUTURE

dl. Teledyne Systems Company: 19601 Nordhoff Street, Northridge. 91324

(1) Design, Develop, Install and Test Multi-User AVM System. Studies of automatic vehicle monitoring systems for both fixed and random route operational control, including transit and police fleets. HRIS 54-059390. (Citations) COMPLETE

dm. California Department of Health, Office of Noise Control, Laboratory Services Branch: 2151 Berkeley Way, Berkeley, 94794.

(1) Effects of Freeway Noise on Hearing Leval and Academic Achievement of Children. To determine correlation between noise levels from freeways, general environmental noise levels, children's exposure levels and hearing loss. J.S. Lukas. HRIS 52-177475 ACTIVE

dn. Sacramento County, Department of Mental Health: Sacramento, 95827

(1) Comprehensive Driving while Intoxicated (DWI) Offender Treatment Program. To assess the effectiveness of a comprehensive rehabilitation program for those convicted of DWI. HRIS 51-160034. ACTIVE

do. University of California, Graduate School of Sociology: P.O. Box 109, San Diego, 92037

(1) Knowledge, Law and Public Authority - Paradigms of Policy Toward the Alcohol-Traffic Safety Problem. The study of drinking and driving as a social problem and the strategies that have emerged for their solution. J.R. Gusfield. HRIS 51-177512. ACTIVE

dp. Mariscal and Company, SBA: 4929 Wilshire Boulevard, Los Angeles, 90010

(1) Technology Sharing and Technical Information Management. Preparation of reports to convey technical concepts or information. HRIS 11-160406. ACTIVE

dq. Marquardt Company: 16555 Saticoy Street, Van Nuys, 91406

(1) Proportional Exhaust Gas Sampler for Light Duty Vehicles. To develop this sampler for spot check inspection and/or end of production line applications. R.G. McGlone, R.K. Braendlein. HRIS 53-177526. (Citations) COMPLETE

dr. Matrecon Incorporated: P.O. Box 24075, Oakland, 94623

(1) Lead Chemicals in Asphaltic Materials. To improve the durability of asphalt for outdoor applications by use of lead chemicals to retard the hardening rate. H. E. Haxo, Jr., HRIS 31-177527. ACTIVE

ds. Rockwell International Corporation, Environmental Monitoring and Services Center: 2421 West Hillcrest Drive, Newbury Park, 91320

(1) Los Angeles Catalyst Study (LACS). To determine ambient air concentrations of various pollutants, and evaluate and improve field methodology for detection of air quality changes. C.E. Rodes, E.P. Parry, R.J. Schwall. HRIS 17-177533. ACTIVE

5. CALIFORNIA (contd)

dt. TJKM: 710 South Broadway, Suite 303, Walnut Creek, 94596

(1) Evaluation of Bus Pre-empted Traffic Signals. Before and after analysis of traffic flow on selected streets and evaluate bus-preempted signals to determine impact on automobiles and buses. C.D. Kinzel. HRIS 54-177543. COMPLETE

du. Jacobs Associates: 500 Sansome, San Francisco 94111

(1) Research in Long Hole Exploratory Drilling for Rapid Excavation Underground. To provide the optimum drilling systems for exploration projects in advance of underground excavations. T.N. Williamson. HRIS 61-100810. ACTIVE

dv. PMB Systems Engineering Incorporated: 500 Sansome Street, San Francisco, 94111

(1) Failure Criteria for Reinforced Concrete Structures. To define the states of internal loading and deformation at which yielding initiates and rupture occurs for various sections of reinforced concrete and relate this criteria to simple and complicated structural elements. R.W. Litton. HRIS 32-178596 ACTIVE

dw. Systems Control, Incorporated: 421 East Cerritos Avenue, Anaheim, 92805

(1) California Consumer-Owned Catalyst-Equipped Vehicle Emissions Study. To obtain emission factors for regulated gaseous pollutants and unregulated particulate pollutants for vehicles operating on unleaded gasoline. J. Gunderson, B. Gafford, R. Herling, R. Carlson. HRIS 53-177532. ACTIVE

(2) General Engineering and Experimental Support for Emission Control Technology. To provide engineering and experimental support to EPA's Emission Control Technology Division. H. Wimette, J. Gunderson, N. Bishop, J.B. Isbill. HRIS 53-135253. ACTIVE

(3) Heavy Duty Vehicle Cycle Development. To develop a soft ware package consisting of a data processing program and an engine dynamometer cycle development program. M. Smith, J. Gunderson, G. Long, L. Moore. HRIS 53-135254. ACTIVE

(4) Inspection of Vehicle Exhaust Emission Instruments Evaluation. A survey of available inspection-maintenance type exhaust emission instruments, and assess and select for testing some 20 of the most qualified. R.D. Gafford, D.R. Hilyard. HRIS 53-153514. ACTIVE

(5) Quality Assurance Programs for Light and Heavy Duty Mobile Emissions Measurement Systems. To determine the quality of various measuring equipment to be used in quality assurance programs for measuring emissions from vehicles. H. Wimette, J. Gunderson, L. Moore, G. Long. HRIS 53-135279 ACTIVE

(6) In-Use Emission Compliance Testing Program. Measurements of emissions from a sample of 1972 light-duty motor vehicles which have been properly maintained and used. Bunch. HRIS 53-135258. ACTIVE

(7) Study of Emissions from Light-Duty Vehicles FY 1975. To perform testing of emissions from light-duty vehicles in various metropolitan areas. O. Vannatta, J.A. Gunderson, D. R. Gukic, D.E. Francis HRIS 53-153541 ACTIVE

6. COLORADO

a. Colorado Department of Highways: 4201 East Arkansas Avenue, Denver, 80222

(1) Optimum Staging of Projects in Colorado Urban Areas. To find the optimum assignment of construction projects to five year intervals so as to maximize system effectiveness while completing the 20-year highway plan with budget restrictions. D.E. Donnelly. HRIS 11-177552. ACTIVE

6. COLORADO (contd)

a. (2) Transportation Energy Research. To assess impact of transportation decisions on total state energy use and evaluate transportation strategies for energy conservation. D.E. Donnelly. HRIS 11-177555. FUTURE

(3) Truck Escape Ramp of I-70. To evaluate the effectiveness of an at-grade arrestor bed type truck escape ramp for future design purposes. D. Donnelly. HRIS 21-192576. ACTIVE

(4) Ground Cover to Prevent Steep Slope Erosion. To determine best and most economical method of preventing soil erosion on steep mountain slopes. HRIS 23-081993. (Citations) COMPLETE

(5) A Full Scale Asphalt Treated Base Experiment. To determine thickness requirements for two full-depth hot-mix sand asphalt bases and a full depth asphalt concrete base, with base type and thickness the variables. D.E. Donnelly. B.F. Kallas. HRIS 24-101416. ACTIVE

(6) Rate of Progressive Deterioration on Colorado Highways. An historical roadway performance analysis to determine average deterioration rates. W. Hutter. D. Donnelly. HRIS 24-192575. (Citations) COMPLETE

(7) Evaluation of Bridge Deck Expansion Devices. An evaluation of various devices to find the most maintenance free and waterproof device for use in Colorado. D. Donnelly. R. LaForce. HRIS 25-192570. ACTIVE

(8) Natural Tunnel Ventilation. Use of a computer program to determine sensitivity factors contributing to the natural flow of air through the Eisenhower Tunnel. R. Hayden. HRIS 25-192574. ACTIVE

(9) NCHRP Cooperative Study of Moisture Induced Damage to Asphaltic Concrete (Field Verification of Test for Stripping). To evaluate the system proposed in an NCHRP report for predicting the susceptibility of asphaltic concrete to moisture damage. D.E. Donnelly. HRIS 31-153579. ACTIVE

(10) Base Stabilization with Foamed Asphalt. To determine if laboratory tests on foamed asphalt on a variety of marginal materials will indicate a satisfactory performance. D.E. Donnelly. HRIS 31-177553. FUTURE

(11) Recycling Pavement Demonstration Project. To provide a field evaluation of the benefits of such recycling. D.E. Donnelly. HRIS 31-177554. ACTIVE

(12) Reflection Cracking in Thin Bituminous Overlays. To provide for a field evaluation of the latest state-of-the-art in controlling such cracking. D.E. Donnelly. HRIS 31-177556. ACTIVE

(13) High Altitude Asphalt. To develop an asphaltic concrete mix formula that will be durable in the environments found at Colorado's high altitudes. S. Tasp. Abel. HRIS 31-192572. ACTIVE

(14) Evaluation of Bridge Deck Repair and Protection Systems. To evaluate bridge deck repair on construction work set up for badly deteriorated bridges, including the use of polymer modified concrete. L. B. Steere. HRIS 40-192571. (Citations) ACTIVE

(15) Program to Reduce Alcohol Related Traffic Fatalities in Selected Areas of Colorado. To develop, demonstrate and evaluate a program of countermeasures aimed at reducing the role of alcohol as a causal factor in highway crashes. HRIS 51-106519. ACTIVE

6. COLORADO (contd)

a. (16) Air Quality Considerations in Traffic Signalling Decisions. A study of the emission rates from vehicles for each mode of operation to determine effects of traffic signals at intersections on emission rates and quantities. R. Griffin. HRIS 54-192569. ACTIVE

(17) Vehicle Classifiers. Inductance loops buried in the roadway, patrol radar-equipment and other monitoring facilities to be used to count vehicles, determine speed and to classify traffic. R. R. Safford, D. Donnelly. HRIS 55-192577. ACTIVE

(18) FHWA Study of the Methodology for Prediction and Minimization of Detrimental Volume Change in Expansive Clays in Highway Subgrades. To collect and monitor data of surface roughness, elevation, in-situ strengths, etc., of finished pavements. D.E. Donnelly. HRIS 62-153563. COMPLETE

(19) Correlation of Subgrade Moduli and Stabilometer "R" Values. To determine if the Stabilometer "R" values of subgrade materials can be correlated with the elastic moduli of the in-place subgrade. B.A. Brakey, F.W. Egger. HRIS 62-081988. ACTIVE

(20) Swelling Soils Study. An evaluation of the different types of remedial measures taken to arrest swelling in soils. G.W. Fritts. HRIS 62-020141. (Citations) COMPLETE

b. Colorado Division of Highway Safety: 4201 East Arkansas Avenue, Denver, 80222

(1) Fatality Analysis File. To establish a research-oriented file of highway fatalities in support of the Alcohol Countermeasures Program. M. Campbell. HRIS 51-038843. (Citations) ACTIVE

d. Colorado Division of Wildlife: 526 Fine Street, Glenwood Springs, 81601

(1) Deer Response to a 2.44 m (8-foot) Fencing Adjacent to Highways. An evaluation of the effectiveness of this type fencing in affecting deer movements on or across high speed highways. D. F. Reed. HRIS 21-106331. (Citations) ACTIVE

(2) Response of Deer to Underpasses and Overpasses. To determine the extent to which deer will utilize these facilities. D. F. Reed. HRIS 21-100769. (Citations) ACTIVE

(3) Highway Lighting to Prevent Deer-Vehicle Accidents. An analysis of vehicle speeds and deer crossings-kill ratios for alternating lights on and off in the latter portion of the winter season. D. F. Reed. HRIS 51-021441. ACTIVE

f. Colorado School of Mines: Golden, 80401

(1) Testing of the Tunnel Muck Transportation Pipeline. To test the pneumatic pipeline system for wear, reliability and maintenance requirements, capacity, noise, dust levels, energy requirements, and costs. R. Faddick. HRIS 33-134787. COMPLETE

(2) The Transportation of Tunnel Muck by Pipeline. To evaluate pipelines as an aid to rapid excavation of tunnels using a cost performance analysis, so as to improve the performance of an hydraulic system. R. Faddick. HRIS 33-134800 COMPLETE

(3) Improving Underground Excavation through the Application of Hydraulic Water Jet Assisted Mechanical Tunnel Boring. To design and field test a full scale hydraulic water jet assisted tunnel boring machine with laboratory experiment and testing support. F. Wang, Babcock. HRIS 33-134886. COMPLETE

(4) Theoretical and Experimental Study of Tunnel Boring by Machine with Emphasis on Boreability Prediction and Machine Design. Small scale and full scale linear cutter tests to study fundamentals of rock failure under cutters of various shapes and sizes. F. D. Wang, W. H. Hustrulid. HRIS 41-134780. COMPLETE

6. COLORADO (contd)

f. (5) Mechanical Tunnel Boring - Prediction and Machine Design. To encourage the increased use of new excavation technology and to insure its efficient economical application, it is proposed to develop an industry-usable criteria for prediction, design and operating parameters. F.D. Wang. HRIS 41-195304. ACTIVE

(6) Investigation of Mechanical Fragmentation for Rapid Tunnel Excavation. To investigate possible methods of rapid excavation of hard rock for mining, civil engineering excavations and military uses. G.B. Clark. HRIS 63-192578 COMPLETE

(7) Rapid Excavation of Rock with Small Charges of High Explosives. To develop a method that would utilize small charges of explosives, several charges to be fired in-line simultaneously, small holes drilled with a bank of drills, automated loading with concurrent drilling and mucking. G.B. Clark. HRIS 63-192579. COMPLETE

(8) Water Jet Assisted Tunneling - Optimization and Design. A study of the use of water jet assistance in drilling operations, concerned with the areas of jet power requirements, system reliability and overall economics. F.D. Wang. HRIS 63-192580. ACTIVE

(9) The Environmental and Pollution Aspects of Coal Slurry Pipelines. A study of these aspects so as to enhance the selection of better designs, construction and operation techniques to provide a balance of engineering economics and environmental considerations. R.R. Faddick. HRIS 90-153560. (Citations) COMPLETE

g. Colorado State University: Fort Collins, 80521

(1) Policy, Administration and Legal Problems in Land Use Planning and Control. Research on land use planning and control; analysis of policy alternatives and consequences of administrative practices and procedures, legal institutions and requirements regarding land use, etc. N. Wengert. HRIS 11-138388 (Citations ACTIVE

(2) Transportation Systems in Colorado: Needs Assessment and Analysis for Comprehensive State Transport. Describe components of the transportation sector in a systematic framework: identify goals and develop measures of performance, etc. D. Blood, W. Wagner. HRIS 11-153574. ACTIVE

(3) Soil Interpretation and Socio-Economic Criteria for Land Use Planning. Determination of physical and soci-economic causes and consequences of encroachment of urban activities upon rural lands. R.D. Heil, R.S. Whitney. HRIS 12-110820 ACTIVE

(4) Development of Colorado Land Use Data System. To develop technical criteria for identifying potential areas of natural hazards, such as floods, landslides, etc. and assess legal requirements of physical data for the designation of natural hazard areas. D.B. Simons, N.I. Wengert, R. Heil. HRIS 15-153558. (Citations) ACTIVE

(5) Environmental Contamination Caused by Lead. An interdisciplinary study of atmospheric aspects of the environmental flow of lead from auto exhausts, as well as the effects on soils and plants. H.W. Edwards. HRIS 17-107474. ACTIVE

(6) Design Criteria for Interceptor Drains. To test analytical equations describing both steady and unsteady flow into drains in sloping aquifers. A.T. Corey, D.B. McWhorter. HRIS 22-134784. ACTIVE

(7) Experimental Investigations of Small Watershed Floods. To develop the interrelationships between the runoff hydrograph and a water quality hydrograph using the 24,000 square foot rainfall-runoff facility. V. Yevjevich, T.G. Sanders, E. F. Schulz. HRIS 22-153562 (Citations) ACTIVE

6. COLORADO (contd)

g. (8) Prediction of Flood Hydrographs from Small Watersheds. To determine the effects of land use on floods, especially by discriminating effects of forested lands as compared with agricultural lands. V. Yevjevich, E.F. Schulz. HRIS 22-153572 (Citations) ACTIVE

(9) Plants to Increase Highway Safety and Beauty and to Decrease Maintenance Cost and Prevent Erosion. Study of plant species selection, both woody and herbaceous, which will adequately cover land adjacent to the paved area so that erosion will be controlled, vehicle impact impeded, maintenance costs decreased and scenic value enhanced. B.T. Swanson, Jr. HRIS 23-195932 (Citations) ACTIVE

(10) Wood Utilization, Preservation, Seasoning. To determine the utility, durability and characteristics of Colorado woods for fence posts, structural timbers and specialty products, compare preservatives, and develop seasoning and improved sawing, etc. H.E. Troxell, J. Bodig, D.L. Crews. HRIS 34-115795. ACTIVE

(11) Highway Salting Influences in Ponderosa Pine Seedlings. To determine the effects of salt foliar sprays on photosynthetic rates and visual injury to these pines. M. J. Trlica. HRIS 40-153566. ACTIVE

(12) Effects of Forest Roads on Habitat for Deer and Elk. A study of the effects of roads on the area that will be used by deer and elk for winter range on the Western slope of the Rockies. J.A. Bailey. HRIS 55-153559. ACTIVE

i. Denver Research Institute: University of Denver: Denver, 80210

(1) Dynamics of Motorcycle Impact III. To describe motorcyclist and cycle kinetics during crash situation in order to optimize cyclist protection and to describe performance standards. H.C. Peterson, R.E. Knight, P.W. Bothwell. HRIS 51-045103. ACTIVE

k. Automotive Testing Laboratories, Incorporated, Transportation Technology Division: 19900 East Colfax Avenue, Denver, 80207

(1) Light Duty Vehicle Emission Study in Denver, Houston, Phoenix and Chicago. To develop exhaust and evaporative emission data and fuel economy data on motor vehicles in these four areas. D.R. Liljedahl, J.L. Terry. HRIS 53-153568 ACTIVE

m. Otis Elevator Company, Transportation Technology Division: P.O. Box 7293, Park Hill Station, Denver, 80207

(1) Voice/Data Communications Subsystems Development. To design a communications system which provides both voice and data information transmission between wayside equipment and vehicles. W.J. Fredericks, Jr. HRIS 90-153575. ACTIVE

(2) Motion Control Subsystems Development. To develop and test a prototype velocity control subsystem. H. R. Griswold. HRIS 90-153569. ACTIVE

(3) Inverter Development. To develop a variable-frequency, pulse-width modulated inverter for use in vehicle propulsion system. C. Curtis. HRIS 90-153567. ACTIVE

n. Rockwell International Division, International Atomics: Rocky Flats Plant, P.O. Box 464, Golden, 80401

(1) System for Handling and Transportation of Transuranic Contamination Waste. To provide an integrated study and development of a standardized container, handling and transportation system for safe and economical relocation of these wastes. R. J. Merlini. HRIS 51-134796 ACTIVE

6. COLORADO (contd)

p. Colorado State Division of Occupation Health: 4210 East 11th Avenue, Denver, 80220

(1) Establish Noise Control Programs in Energy Impacted Communities of Colorado (Including Land Use Planning). To assist these communities to develop comprehensive noise control programs. A.J. Hazle, B.S. Evans. HRIS 15-153561 ACTIVE

q. University of Colorado: 1100 14th Street, Denver, 80202

(1) The Impact of Part-time Drivers on Transit Operating Costs. To analyze the potential economic impacts of part-time bus drivers on urban bus transit companies. V.H. Surti, Y. Lee, B. Lindstrom-Furutani, Y. Leung. HRIS 12-177551 (Citations) COMPLETE

(2) Comparative Analysis of Taxi Cab Usage in Low Income Area and Metropolitan Area. To determine general travel and socioeconomic characteristics of taxi users, such as trip purpose, trip time, length, time at trip destination, trip frequency, sex, age, etc. V.H. Surti, Y.J. Shippy. HRIS 12-177550. (Citations) COMPLETE

(3) Mechanical Properties of Oil Shale. To investigate these properties under both static and dynamic loads, the permeability, variabilities and statistical correlation with geological parameters, and with the oil yield. N.Y. Chang. HRIS 63-177549. ACTIVE

7. CONNECTICUT

a. Connecticut Department of Transportation, Bureau of Planning and Research: P.O. Drawer A, Wethersfield, 06109

(1) Development of a Laboratory Data System. To utilize electronic data processing in handling of laboratory data, incorporate statistical methods to reduce testing frequency, and provide management with rapid and organized materials information. R. Christman, S.C. Attardi, K.R. Lane. HRIS 11-100140. (Citations) COMPLETE

(2) Performance of a CRC Overlay. To study the performance of a continuously reinforced concrete pavement overlay as a method of upgrading riding quality and traffic capacity. D.G. Bowers. HRIS 21-082006 (Citations) ACTIVE

(3) Sedimentation Pools on Transportation Projects. Study performance of various sizes of pools, their efficiencies and then recommend design changes to improve the hydraulic efficiency. C.E. Dougan. HRIS 22-177560 ACTIVE

(4) Effects of Deicing Salts upon Trees, Shrubs and Soils. To determine deicing salt tolerance for a wide range on species adapted to Connecticut climatic conditions. Button, HRIS 23-153580. (Citations) COMPLETE

(5) Pavement Recycling: Phase I, Energy, Environmental and Material Considerations. To develop mix-design criteria for use of recycled materials in maintenance and construction, develop cost data and energy equivalents, and design roadway structures incorporating such material. D.G. Bowers. HRIS 24-192590. ACTIVE

(6) Use of Asphalt Emulsions in Connecticut. To determine how emulsified-asphalt mixes compare with conventional mixes and treatments prepared from asphalt cements, cutbacks and tars. Dougan. HRIS 31-177558 INACTIVE

(7) Use of Waste Material in Transportation Construction Projects. To determine the extent to which wastes could be used, delineate environmental benefits and disbenefits and define needed specification changes. J.M. Sime. HRIS 33-134820. ACTIVE

7. CONNECTICUT (contd)

(a) (8) Evaluation of the Use of Salt Brine for Deicing Purposes. Construction, use and evaluation of four portable brine systems under various climatic conditions. M. M. Kasinskas. HRIS 34-082002 (Citations) ACTIVE

(9) Assessment of the Rapid Non-destructive Testing of Concrete Structures. To establish correlations between flexural strength determined by beam breaks and compressive strength determined by the Windsor Probe. D.G. Bowers. HRIS 34-192587 ACTIVE

(10) Wet-weather High Hazard Locations Identification and Evaluation. To determine if smooth tires will allow better detection of potential wet weather accident sites, and develop improved paving materials and techniques. G.A. Ganung. HRIS 51-134821. (Citations) ACTIVE

(11) Field Installation and Evaluation of Post-mounted Delineators. An evaluation of the effectiveness of five different types reflectorized delineators mounted on flexible or rigid posts on sections of highways having a high frequency of "run-off-the-road" type accidents. R.E. Liptak. HRIS 54-192589. ACTIVE

(12) Raised Pavement Markers at Hazardous Locations. To determine if raised markers provide improved delineation. R.E. Liptak. HRIS 54-177559. (Citations) ACTIVE

c. University of Connecticut: Storrs, 06268

(1) Assessment of Highway Environmental Impact in Connecticut Using Remote Sensing Procedures. An evaluation of these procedures for determining potential impacts of proposed highway projects. W. C. Kennard, M.W. Lefor, Departments of Civil Engineering and Natural Resources Conservation. HRIS 17-192595 ACTIVE

(2) False-Color Infrared Aerial Photography as an Aid in Evaluating Environmental Impacts on Inland Wetlands by Proposed Highways in Connecticut. A comparison of the use of infrared photography with black and white for these evaluations. W. C. Kennard, M.W. Lefor, Civil Engineering Department. HRIS 21-177562. COMPLETE

(3) Sedimentation from Logging Roads and Skid Trails in Eastern Connecticut. To determine and evaluate the impact of these roads and trails on production of sedimentation, and develop guidelines to minimize these causes. H.G. Haalck. Dept. of Natural Resources. HRIS 22-153584. ACTIVE

(4) Selection and Propagation of New and Unique Forms of Native Conifers from Witches' Broom Progeny. To select from seedling progeny of non-pathogenic witches' broom distinct genetic forms to serve functional and aesthetic needs in urban and rural environments. S. Waxman, Dept. of Plant Science. HRIS 23-192597 ACTIVE

(5) Dynamic Tests of Concrete Bridge Decks. The use of forced vibrations through a bridge deck as a means of monitoring and predicting deck condition. J. E. Stephens, Dept. of Civil Engineering. HRIS 25-102935. ACTIVE

(6) Recycled Rubber in Roads. To determine the potential for beneficially using large amounts of recycled rubber as a solution for solid waste problems, and simultaneously establishing cost and performance data base. J.E. Stephens. HRIS 34-082017 ACTIVE

(7) Reducing Highway Maintenance Through Effective Drainage. To establish effective subsurface drainage methods as a means of collecting ground water before it becomes a problem. R.P. Long, , K.A. Healy, Joint Highway Research Advisory Council. HRIS 40-177564. ACTIVE

7. CONNECTICUT (contd)

c. (8) Portable Hydrodynamic Brine Roadway Deicer. The use of a portable device that can be moved from one vehicle to another by one man. J.F. Carney, III, Dept. of Civil Engineering. HRIS 41-192596. ACTIVE

(9) Experimental Evaluation of a Portable Energy Absorbing System for Highway Service Vehicles. To determine by a full scale crash test the performance of this device. J.F. Carney, III, Dept. of Civil Engineering. HRIS 51-153581 ACTIVE

(10) Determinants of Choice in Outdoor Recreation. Identify and quantify the variables affecting individual's choices, the economic, social and institutional variables affecting the allocation of resources, etc. M.W. Kottke, Dept. of Agricultural Economics. HRIS 55-153579. ACTIVE

(11) Identification of Chemically Reactive Bedrock within the Connecticut Highlands and the Determination of its Effect upon Freshwater Chemistry. To identify such rocks and determine the consequences upon freshwater chemistry. H.I. Kasseoru, Civil Engineering Department. HRIS 61-177561. ACTIVE

(12) Consolidation of Varved Clay. To correlate laboratory consolidation and shear tests with the settlement rate and strength increases in highway embankments on varved clay. K.A. Healy, R.P. Long, Dept. of Civil Engineering. HRIS 62-109481 (Citations) ACTIVE

g. Center for the Environment and Man, Incorporated: 275 Windsor Street, Hartford, 06120

(1) Analysis of Future Effects of the Fuel Shortage and Increased Small Car Usage upon Traffic Deaths and Injuries. To project the number of deaths and injuries over the next decade by fleet size, miles travelled, type of road, speed limitations, safety improvements, etc. HRIS 51-048933. ACTIVE

h. Dunlap and Associates: Incorporated: One Parkland Drive, Darien, 06820

(1) Training in the Driver Licensing Administrative Hearing Process. Training sessions on the process in accordance with requirements and concepts developed under previous NHTSA research, for employees of judicial and administrative agencies. HRIS 11-160069. ACTIVE

(2) Motor Vehicle Inspection Training State and Community Instructors. To train potential users in a workshop for educators and training officials in vehicle inspection programs. HRIS 11-160101. ACTIVE

(3) Materials Development for Motor Vehicle Inspection Training. To develop, test and evaluate a package of printed instruction material to provide the elements necessary for training inspectors. P. Brainin, J. Hamilton. HRIS 11-058765. ACTIVE

(4) Self Test Devices. To determine if individuals will change their drinking and driving behavior if they know their BAC/impairment level, by developing such self-testing devices and procedures. J.F. Oates, Jr. HRIS 52-058870. ACTIVE

(5) Laboratory Testing of Alcohol Safety Interlock Systems. To test in the laboratory the ability of these devices to detect alcohol-induced impairment in individuals. HRIS 52-048936. INACTIVE

i. Robert Reebie and Associates, Incorporated: P.O. Box 1436, Greenwich, 06830

(1) National Intermodal Network Feasibility Study. A study of the use, costs and efficiencies of piggy-back movement of trucks and containers. R.S. Reebie and others. HRIS 15-100447. ACTIVE

7. CONNECTICUT (contd)

i. (2) TRANSEARCH - The Data Base for Freight Transportation. A new comprehensive source of specific origin destination, mode and commodity freight traffic information. D. A. Isaowitz, J.S. Katz, R. Podell. HRIS 16-192594. ACTIVE

(3) New York Intermodal Services. To determine the feasibility of implementing direct intermodal service to a terminal or terminals east of the Hudson River. M. J. Keale, J.B. Riker, A.C. Robertson. HRIS 16-192593 (Citations) ACTIVE

(4) Analysis of Traffic Effects of Consolidation Projects. To estimate the potential cost savings and possible improvements to quality of rail service through various types of railroad consolidations proposed by the carriers. C.J. Liba and others. HRIS 16-192591 ACTIVE

k. Wilbur Smith and Associates: 155 Whitney Avenue, P.O. Box 1809, New Haven, 06507

(1) Characteristics of Urban Transportation Demand. To provide a manual for urban transportation demand characteristics and their planning implications. H. S. Levinson. HRIS 15-153576 (Citations) ACTIVE

m. Connecticut Department of Motor Vehicles: 70 State Street, Wethersfield, 06109

(1) Implementation and Operation of Fatality Accident File. To establish a statistical file which will contain data needed to produce periodic reports describing accident environment, study countermeasure programs, and a basis for program evaluation. HRIS 51-058451 ACTIVE

o. American Cyanamid Company, Chemical Research Division: 1937 West Main Street, Stamford, 060904

(1) Automobile Exhaust Catalysts. To improve the performance of catalysts used to remove pollutants from exhausts. W.F. Linke. HRIS 53-134803 ACTIVE

p. Connecticut Motor Club: 2276 Whitney Avenue, Hamden, 06518

(1) Investigation of Possible Safety-Related Defect Problems. To establish procedures for and pricing methodology for issuance of orders by NHTSA for completion of safety-related defects investigations. HRIS 51-058867 ACTIVE

q. DAPCO Industries, Incorporated: Old Mill Road, Georgetown, 06829

(1) Fabricate, Test, Evaluate and Deliver an Ultrasonic Wheel Probe Inspection System. To provide a system which can detect all potentially dangerous defects in wheels, and compare the system with the results from a magnetic system. HRIS 53-058458. ACTIVE

w. The Futures Group: Glastonbury, 06033

(1) Alternatives for Major Changes in Urban Transportation. A review of existing studies of actions and alternatives which could potentially cause major impacts on urban transportation and travel patterns over the next 30 years. HRIS 12-059391 ACTIVE

x. United Technologies Research Laboratories: Silver Lane, Hartford

(1) Laser Assisted Boring Machines. To assess the importance to the rock kerfing process of laser power density, traverse speed and optical system number. HRIS 63-025221. ACTIVE

8. DELAWARE

a. Delaware Department of Highways and Transportation: P.O. Box 778, Dover. 19901

(1) Special Trip Generator Study. To formulate equations for forecasting anticipated trip generations in residential, commercial and industrial developments. W. Elgie, R. Shiun, C. Newnum. HRIS 55-108507 COMPLETE

9. FLORIDA

a. Florida Department of Transportation: Haydon Burns Building. 605 Suwannee Street. Tallahassee. 32304

(1) Implementation and Operation of Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program and a means of evaluating that program. HRIS 11-048532. ACTIVE

(2) Implementation of FHWA Structural Subsystem in Florida's Pavement Design. An implementation study on a rational design procedure for flexible pavements. based on analysis of material properties, traffic loading and environmental conditions. Smith, Sharma. HRIS 24-153648 ACTIVE

(3) Evaluation of Asphalt Concrete Pavement Recycling. To evaluate various asphalt pavement recycling processes -- hot mix, cold mix and surface recycling. C.F. Potts. HRIS 24-192645 ACTIVE

(4) Sulphur-Asphalt Base Evaluation. To evaluate the performance of a bituminous base course using sulphur as an asphalt cement extender. C.F. Potts. HRIS 24-192655 ACTIVE

(5) Benkelman Beam vs Dynaflect Deflection Correlation for Flexible Pavements. To investigate this relationship. C.F. Potts. HRIS 24-192643 ACTIVE

(6) Comparison of Friction Numbers with Wearing Numbers Obtained with the Laboratory Polishing. To compare in-service pavement polishing using different aggregates with laboratory tests of the same aggregate. C.F. Potts. HRIS 24-192644 ACTIVE

(7) Evaluation of Quality of Flexible Pavement Construction. An evaluation of specifications, control tests and reporting procedures, and independent assuance testing programs as they relate to design and construction. C.F. Potts. HRIS 24-192646 ACTIVE

(8) Field Tests and Evaluation of Pavements on Econocrete Bases. Evaluate feasibility, practicability, economy and performance of pavement constructed on base courses composed of cement and low quality aggregates. T.J. Larsen. Office of Materials and Research. HRIS 24-192648 (Citations) ACTIVE

(9) Flexible Pavement Design (Surveillance of Experimental Flexible Pavements). An evaluation of five test projects of design criteria. C.P. Potts. HRIS 24-192649 ACTIVE

(10) Skid Resistance Survey of Existing Pavements. An extensive testing program on all systems of pavement frictional levels and so as to reduce skidding accidents. Fuller. HRIS 24-192654 ACTIVE

(11) Implementation of Pavement Management System (PMS) for Florida. To develop a computerized PMS for flexible and rigid pavements. Sharma. HRIS 24-192652 ACTIVE

(12) Hot Weather Concreting (Portland Cement). To determine cement types and/or chemical additions and admixtures or handling procedures which will produce high quality concrete in temperatures above 90 degrees F. H.W. Harling. W.R. Brown. T.J. Larsen. Office of Materials and Research. HRIS 32-192650. ACTIVE

9. FLORIDA (contd)

a. (13) Laboratory Investigation of the Basic Variables Influencing Corrosion of Steel in Concrete. To determine properties of various systems for inhibiting this corrosion. T.J. Larsen. R.P. Brown. R.J. Kessler. Office of Materials and Research. HRIS 32-082081 (Citations) ACTIVE

d. University of Florida: Gainesville. 32611

(1) Operational Alternatives to Reduce Energy Consumption of Roadway. To identify roadway lighting criteria. evaluate in terms of current literature. and develop future lighting projects such that cost and energy consumption do not exceed public benefits. K.G. Courage. Transportation Research Center. HRIS 15-177569. COMPLETE

(2) Study of Transportation Available for the Movement of Florida Perishable Agricultural Commodities. To determine better ways to estimate the requirements for transportation that will result in neither too much or too little transport to move annual crops. G. Long. T. Maze. Transportation Research Center. HRIS 16-192662 ACTIVE

(3) Combustion Properties of Hydrogen in an Internal Combustion Engine. To determine the combustion and detonation properties of hydrogen used as a motor fuel. V. P. Roan. J. Lenertz. Dept. of Mechanical Engineering. HRIS 17-134826 ACTIVE

(4) Solar-Electric Car. To develop a "mini-bus" capable of operating on solar energy to charge batteries. E.A. Farber. C.A. Morrison. H.A. Ingley. Dept of Mechanical Engineering. HRIS 17-134829. ACTIVE

(5) Statistical Analysis of Economic Disequalibrium. To develop models for estimating such problems as demand and supply. marketing. rationing. and economic development. G.S. Maddala. Dept. of Economics. HRIS 17-134830 ACTIVE

(6) The Use of Remote Sensing in Solving Geological and Coastal Engineering Problems. To assist state and local agencies in solving problems through the use of remote sensing methods. such as LANSAT imagery. aerial photography. etc. H.K. Brooks. B.E. Ruth. Dept. of Civil and Coastal Engineering and Geology. HRIS 21-153654 ACTIVE

(7) Analysis of Storm Water Seepage Basins. To develop engineering design. maintenance and operating procedures for such basins. S. Petryk. W.C. Huber. Engineering and Industrial Experiment Station. HRIS 22-134822 INACTIVE

(8) Establishment of an Urban Rainfall/Runoff Data Base. To establish such a base for evaluating and testing simulation models. W.C. Huber. J.P. Heaney. Dept. of Environmental Engineering Sciences. HRIS 22-153645 (Citations) ACTIVE

(9) General Methodology for Evaluating Urban Stormwater Quality Management Alternatives. The use of a computer simulation tool for studies of pollution caused by storm and combined sewer overflow. based on the Storm Water Management Model. W. C. Huber. J.P. Heaney. Dept. of Environmental Engineering Sciences. HRIS 22-153646 (Citations) ACTIVE

(10) Assessment of Receiving Water Impacts from Urban Stormwater Pollution. To obtain information on the impact of urban stormwater pollution on receiving waters. J.P. Heaney. W.C. Huber. Dept. of Environmental Engineering Sciences. HRIS 22-192659. ACTIVE

(11) Fatigue of Asphalt Concrete. To evaluate the effect that strain level. temperature and asphalt properties have on the fatigue life of paving mixtures. B.E. Ruth. Engineering and Industrial Experiment Station. HRIS 31-134836. (Citations) COMPLETE.

9. FLORIDA (contd)

d. (12) Asphaltic Concrete Design. To study the function of the bitumen component in design and service behavior of asphaltic concrete. H.E. Schweyer. Dept. of Chemical Engineering. HRIS 31-134832 (Citations) COMPLETE

(13) Fatigue and Fracture of Asphalt Concrete. To correlate the rheological properties of bitumens with the dynamic elastic, creep, and fracture strain behavior of asphaltic concrete mixtures. B.E. Ruth. Engineering and Industrial Experiment Station. HRIS 31-177566 ACTIVE

(14) Improved Asphaltic Concrete Design Methodology. To study the low temperature rheology of asphalt bitumen and relate it to the rheology of mixes made therefrom at different temperatures. H.E. Schweyer. Dept. of Chemical Engineering. HRIS 31-177568. ACTIVE

(15) Properties of Lean Concrete. To characterize mix design requirements and properties of lean concrete using flyash and locally available aggregates not normally considered for use in concrete mixtures. B.E. Ruth. Engineering and Industrial Experiment Station. HRIS 32-177570. ACTIVE

(16) Investigation of Laboratory and Field Tests for Identification of Subgrade Construction Problem Soils. A study of the various means of identifying poor sand subgrade soils. W.H. Zimpfer. Dept. of Civil Engineering. HRIS 33-134837. COMPLETE

(17) Programs for the Design and Optimization of Traffic Operational Improvements. To evaluate a variety of computer models and programs from the functional and practicable aspects. K.G. Courage. C.E. Wallace. Transportation Research Center. HRIS 54-192661 ACTIVE

(18) Florida Lime Rock Investigation (Strength Gain Study). To study the factors which may affect strength and strength gain with time. W.H. Zimpfer. Dept. of Civil Engineering. HRIS 61-177567 ACTIVE

e. University of Miami: Coral Gables. 33124

(1) Single Vehicle Accident Investigation Study. To evaluate the effects of roadside obstructions, restraining devices and occupant protection in interior impact. W. Fogarty. N. Morrow. C. Kurucz. HRIS 51-106405 COMPLETE

(2) Investigation of Air Cushion Restraint System (ACRS) Accidents. (Southeast Region). To investigate all accidents and incidents involving air-bag equipped vehicles in the region. W. Fogarty. HRIS 51-059172. ACTIVE

(3) National Crash Severity Study. A study of police-reported towaway accidents involving transport to a treatment facility, overnight hospitalization, or death, as well as partial sampling of lesser consequences. B. Morrow. C. Kurucz. HRIS 51-160039. ACTIVE

(4) Hydrogen Engine Performance Analysis. To develop a comprehensive data base for the performance and emission characteristics of multicylinder hydrogen-fueled engines of future use. R.R. Adt. Jr., M.R. Swain. J.M. Pappas. Dept. of Mechanical Engineering. HRIS 53-153647. ACTIVE

(5) Air Cushion Restraint System. To evaluate the air cushion system based on in-depth field investigation of accidents involving vehicles so equipped and comparison with cars of similar configuration without the air bags. W. Fogarty. HRIS 53-134831. COMPLETE

9. FLORIDA (contd)

h. Metropolitan Dade County, Department of Traffic and Transportation: 8675 N.W. 53rd Street, Suite 201, Miami, 33166

(1) An Urban Pedestrian Safety Demonstration Project. To demonstrate that a systematic countermeasure approach to urban pedestrian safety will reduce fatal and injury accidents. J.J. Robinson. HRIS 51-192658 (Citations) ACTIVE

i. University of North Florida, Department of Transportation and Logistics: P.O. Box 17074, Jacksonville, 33216

(1) Study of Unions, Management Rights and the Public Interest in Mass Transit. An examination of the process and operational impact of collective bargaining in mass transit. J.A. Smith, Jr. HRIS 11-153652 (Citations) ACTIVE

(2) Multi-Modal, Multi-State Transportation System Evaluation. To evaluate the feasibility of a corridor extending from Kansas City, Missouri, to Jacksonville, for movement of goods and people. P.S. Jones, J.A. Smith, Jr., HRIS 11-153650 ACTIVE

p. Florida State University: Tallahassee, 32306

(1) Pedestrian Safety Evaluation. An impact analysis of selected pedestrian safety programs sponsored through the Bureau of Highway Safety. R. Chackerian, Dept. of Public Administration. HRIS 51-192642 ACTIVE

(2) Evaluation of Experimental Brake Inspection Program. An analysis of three methods of brake inspection in terms of cost effectiveness in the 36 counties which administer inspection programs. R. Chackerian. HRIS 53-177565. ACTIVE

o. University of Miami: Miami, 33124

(1) Characterization of Methanol/Gasoline Blends in Automotive Fuel. A study of the performance, emissions, and practical use characteristics of these blends for automotive use. R.R. Adt Dept. of Mechanical Engineering. HRIS 17-134825 ACTIVE

(2) Driver Observations at Unsignalized Railroad Crossings. Observations of drivers at unsignalized at-grade crossings to evaluate effectiveness of present traffic control and warning devices. W.J. Fogarty, Dept. of Civil Engineering. HRIS 52-193641 ACTIVE

10. GEORGIA

a. Georgia Department of Transportation, Office of Materials and Research: 15 Kennedy Drive, Forest Park, 30050

(1) Georgia Statewide Traffic Forecasting Model. To develop a highway network which can provide time or distance bands and accessibility indices and consider the feasibility of an operational modeling procedure that simulates and/or predicts average daily traffic. N. Hilsen, J. Moskaluk. HRIS 13-177583 (Citations) ACTIVE

(2) Development of a Transportation Planning-Land Use Model. To develop an operational land use model to determine transportation impacts upon land using activities. C.F. Floyd. HRIS 15-082097. (Citations) ACTIVE

(3) Grassing Improvements Study. To develop various grasses and plants for roadside plantings and erosion control. P.B. Middlebrooks, Jr. HRIS 23-177574. ACTIVE

(4) Selection, Establishment and Maintenance of Vegetation for Erosion Control on Roadside Areas. Study of the most effective ways of using vegetation to control erosion in the various areas of the state, the most effective mowing and maintenance methods. P.B. Middlebrooks, Jr. HRIS 23-020232 (Citations) ACTIVE

10. GEORGIA (contd)

a. (5) Maintenance Practices for Portland Cement Concrete Pavements. To determine effectiveness of current practice and investigate new methods and adopt those that seem to be preferable. J.B. Thornton. W. Gulden. HRIS 24-153657 ACTIVE

(6) Overlays for Plain Concrete Pavements. To determine which of four concrete and sixteen asphalt overlay designs will best provide for rehabilitation of faulted and cracked pavements. W. Gulden. HRIS 24-134853. ACTIVE

(7) Bridge Widening Study. A study of the effects of vibration induced by traffic on reinforcement embedded in fresh concrete slabs being used to widen existing bridges. J.B. Thornton. HRIS 25-177577 ACTIVE

(8) Determination of Retaining Wall Pressures and Movements. To measure the pressure earth exerts on the wall and measure and correlate wall movements with earth pressures. R.W. Deaver. HRIS 25-100762 ACTIVE

(9) Predicting Moisture-Induced Damage to Asphaltic Concrete. Field Evaluation. To evaluate the system for predicting moisture-induced damage developed under an NCHRP project. W. Gukden. HRIS 31-134855 ACTIVE

(10) Development of a Certified Asphalt Plant Mix Control Program. To develop a system for placing the burden of asphalt quality control on the plant mix producer. L. Caylor. C. Runion. HRIS 31-134843 ACTIVE

(11) Evaluation of Rubber-Asphalt for Rehabilitation of Flexible Pavements. An evaluation of rubber-asphalt as a binder for seal coat construction and as a stress relieving interlayer to reduce or eliminate reflection cracking. W. Gulden. HRIS 31-153656 ACTIVE

(12) Recycling Asphaltic Concrete. An evaluation of the performance of two recycling projects. with a comparison of energy requirements for the recycling with conventional construction. R.W. Deaver. HRIS 33-153660 ACTIVE

(13) Evaluation of Encapsulated Lens Reflective Sheeting. To evaluate the performance of the retroreflectivity of this material used for highway signs. C.G. Neill. Jr. HRIS 34-177578 ACTIVE

(14) Pavement Delineation Study. To compare performance and economic aspects of various delineation systems. including thermoplastics. and raised markers. both reflective and non-reflective. C. Neill. HRIS 34-153659. ACTIVE

(15) Wrongway Traffic Movements on Freeway Ramps. To monitor such movements. identify countermeasures. and evaluate the effectiveness of those measures. P.S. Parsonson. HRIS 55-177584 ACTIVE

(16) Equipment Evaluation and Selection for Interstate Truck Weighing Stations. To evaluate and select equipment for weighing and dimensioning trucks at permanent stations. R. Deaver. HRIS 55-177576 ACTIVE

(17) Development of Performance Criteria for Shale Embankments. Gather performance data on numerous shale embankments already constructed plus construction data from project records and shale durability information. J. Robertson. HRIS 62-153655 ACTIVE

(18) Graded Aggregate Base Course Study. Evaluation of such variables as thickness. compaction and gradation and their interactions with respect to performance of base courses. D. Brown. HRIS 62-134847 ACTIVE

10. GEORGIA (contd)

c. Atlanta University: 233 Chestnut Street, Atlanta. 30314

(1) Training Program for Minority Students in Transportation Engineering. To provide some fifteen minority engineering students with education in the field of urban transportation engineering. C. Espy. HRIS 11-059902 ACTIVE

(2) Transportation Policy and Program Impact Analysis. To analyze the transportation decision-making process at the metropolitan scale. including policies. interrelation with other planning processes. extent of citizen involvement. impact on socio-economic groups. etc. S.O. Davis. HRIS 11-038956 ACTIVE

e. Georgia Institute of Technology: Atlanta. 30332

(1) Devise Analytical Procedures for the Study of a Specific Multi-Modal Transportation Corridor. To develop an analytical. network-based. procedure designed to measure quantitatively the interactions between economic development potential and transportation service improvements. G.P. Sharp and others. School of Industrial and Systems Engineering. HRIS 12-192667 (Citations) ACTIVE

(2) Georgia Intercity Bus System Evaluation. To recommend a plan for improving intercity bus service that promotes easier entry into the intercity bus market. better service and a financially feasible operating environment. J. Moskulak. J. Marks. HRIS 12-192664 ACTIVE

(3) Development of a Small Urban Area Transportation Planning Technique. Use of UTPS for small area planning and subjective evaluation. D. Covault. School of Civil Engineering. HRIS 12-177582 ACTIVE

(4) Development of an Urban Peak-Hour Traffic Model Based in the 1970 Census and Concurrent Ground Counts. Phase II. To develop a method for predicting peak hour work trips. D.O. Covault. School of Civil Engineering. HRIS 13-108489 (Citations) COMPLETE

(5) Low Cost Bicycle Path Pavements. To develop designs for these pavements of adequate strength and durability at the lowest possible cost. J.S. Lai, School of Civil Engineering. HRIS 24-058751 COMPLETE

(6) A Study of Factors Affecting Crushed Stone Base Course Performance. To investigate selected variables which influence the design and performance of unstabilized. crushed stone bases. such as thickness. gradation. size and type of aggregate. subgrade type and effect of saturation. R.D. Barksdale. Q.L. Robnett. W. Bailey. School of Civil Engineering. HRIS 24-177586 ACTIVE

(7) Strengthening of Existing Bridges using Epoxy Injection. To determine if an existing non-composite bridge can be made composite by injecting expoxy between steel stringers and concrete deck. L.F. Kahn. K.M. Will. School of Civil Engineering. HRIS 25-177585 ACTIVE

(8) Implementation of Polymer Concrete Technology for Highway Repair and Maintenance. To provide the Georgia DOT with practical procedures and specifications for use of this material for repair and maintenance. D.J. O'Neil. Engineering Experiment Station. HRIS 32-177587 ACTIVE

(9) Analysis of Ground Vibrations Produced by Pile Driving. A study of the influence of pile type. hammer type and operating characteristics. etc. on intensities of ground vibrations. J.H. Hardcastle. School of Civil Engineering. HRIS 63-134841 INACTIVE

10. GEORGIA (contd)

j. University of Georgia: Athens. 30602

(1) Enhancing Quality of Rural Life Through Community Services and Public Information. Determine and evaluate the type, location, production, distribution, financing and quality variations in community services for non-metropolitan Georgians. J. M. Broder Dept. of Agricultural Economics. HRIS 11-192672 ACTIVE

(2) Potential for Solid Waste Recycling and Recovery. To determine the feasibility of resource recovery as an alternative method of solid waste disposal. E. E. Brown. Dept. of Agricultural Economics. HRIS 15-192673 ACTIVE

(3) Herbicide Development and Usage for Highways. To provide guidance to GDOT in implementing a weed control program, identify and test herbicides and the use of retardants to reduce mowing requirements. J. Miller. P.B. Middlebrooks. Jr. Cooperative Extension Service. HRIS 40-177591. ACTIVE

k. DeKalb County School System: Decatur. 30032

(1) Safe Performance Secondary School Driver Education Curriculum Demonstration Project. A comparison of the driving performance of three groups of randomly selected students who will receive different course of training as to differences in crashes and conviction rates. HRIS 51-160334 ACTIVE

l. Georgia Mountains Planning and Development Commission: P. O. Box 1720. Gainesville. 30501

(1) Georgia Mountain Rural Transportation Program. A study of a five-days a week morning and evening, peak hour commuter service on a fixed schedule between several rural communities. HRIS 12-177590 ACTIVE

m. State Government of Georgia: Atlanta 30334

(1) Rural Transportation Demonstration Project Extension. North Georgia Community Action Agency. To provide transportation service on 6 fixed and demand-responsive routes. W. Halsten. HRIS 16-192671 ACTIVE

n. William H. Mills and Associates: 2496 Dellwood Drive. Atlanta. 30305

(1) Surface Treatment Study. An in-depth investigation of all phases of surface treatment work to develop specifications, quality control procedures construction guides and training aids. W.H. Mills. J.B. Thornton. HRIS 24-101481 (Citations) ACTIVE

11. HAWAII

a. Hawaii Department of Transportation: 869 Punchbowl Street. Honolulu. 96813

(1) Pavement Serviceability Standards. To determine standards of pavement condition and compare accuracy of the AASHO Road Test formulae against graphical time-index trends in predicting time for reconstruction or resurfacing. R. Aratani. P. Hironaga. Highways Division. HRIS 11-101561 INACTIVE

(2) Growing Characteristics of Plants in Shade under Structures. To monitor comparative growth rates of plants potentially adaptable to shade conditions. Hironaga. Highway Division. HRIS 23-153663 COMPLETE

(3) Effective Methods of establishing and Maintaining Vegetal Ground Covers for Highways in West Central Oahu. To determine characteristics of native and imported plants that will provide better erosion control and aesthetic appeal, economically and effectively. T. Aratani. P. Hironaga. D. Sakamoto. Highway Division. HRIS 23-101178 ACTIVE

11. HAWAII (contd)

a. (4) Effectiveness of Tubelings -- A New Dryland Planting Technique. To determine effectiveness of this method of planting in establishing shrubs and ground cover in arid areas on highway slopes. T. Aratani, P. Hironaga, Highway Division. HRIS 23-101215 COMPLETE

(5) Fatal Accident Reporting System. To establish a statistical file which will contain data needed to produce periodic reports on accidents countermeasures, and program evaluation. C.H. Matsuo, Motor Vehicle Safety Office. HRIS 51-038842 (Citations) ACTIVE

(6) Settlement of Waimalu Embankment, H-1 Freeway. To determine cause of vertical movement occuring and recommend remedial measures. W. Kuroiwa, D. Santo, Land Transportation Facilities Division. HRIS 63-192677 ACTIVE

b. University of Hawaii: 2540 Dole Street, Honolulu, 96822

(1) University Research and Training Program (III). To establish an internship program in cooperation with local transportation agencies and conduct research in bus patronage and demand-responsive service. C.S. Papacostas, Dept. of Civil Engineering. HRIS 11-192679 ACTIVE

(2) University Research and Training Program (I). To establish an internship program in cooperation with local transportation agencies and conduct research in safety, transport of the elderly and handicapped, system management. C.S. Papacostas, Dept. of Civil Engineering. HRIS 11-192678. ACTIVE

(3) Soil Interpretation and Socio-economic Criteria for Land Use Planning. Evaluate the development of land classification, clarify relationship between soil rating, land evaluation and land classification, and adapt conservation economics principles to soil interpretation and land quality evaluation for land classification. B. Yamauchi, H. Ikawa. HRIS 12-110813 ACTIVE

(4) Impacts of Changes in Transportation on Hawaiian Agriculture. To analyze changes in technology, structure and cost of transportation and the effects of current and proposed changes on agriculture, and identify alternative courses of action and cost benefits. W. Miklius, P.V. Garrod, Agricultural Experiment Station HRIS 15-083477 (Citations) ACTIVE

(5) Evaluation of Roof-Cistern Systems for Residential Water Supply. To develop a household supply management program and make cost comparisons with other alternatives for rural household water supply. Y. Fok, E.T. Murabayashi, Water Resources Research Center. HRIS 22-192680 ACTIVE

(6) Infiltration Characteristics of Selected Hawaiian Urban Land Types. A study of the effects of urban land use on infiltration and runoff for the design of storm drainage systems. Y. Fok, E.T. Murabayashi, Water Resource Research Center. HRIS 22-134857 ACTIVE

(7) Evaluation of Falsework Stresses from Post-Tensioning. To develop a technique for predicting such stresses, and to measure these stresses during actual construction. H. Hamada, Dept. of Civil Engineering. HRIS 25-192675 ACTIVE

(8) The Identification of Randomly Excited Linear Structural Systems. An experimental, theoretical and computational analysis of the linear dynamical systems such as tall buildings under wind action, or bridges under wind and vehicle motion excitation W. Gersch, N.N. Nielsen, School of Arts, Computer and Information Science. HRIS 25-134856. COMPLETE

11. HAWAII (contd)

b. (9) Response of Concrete Members Made with Manufactured Sand to Sustained and Dynamic Loads. To investigate the time-dependent deformation of such concrete subjected to sustained and dynamic loads. H.S. Hamada. HRIS 32-104340 (Citations) COMPLETE

(10) Development of a Statewide Accident Report Form. To develop an improved accident report form interactively with users of the report. C.S. Papacostas. Dept. of Civil Engineering. HRIS 51-192674 ACTIVE

(11) Pedestrian and Pedacycle Safety Project. Analysis of accidents of pedestrians and pedacycles, their causes, the extent to which physical improvements can reduce the incidence of such accidents, and assessment of the need for such improvements. J. Holmstrom, Pacific Urban Studies and Planning Program. HRIS 51-192676 ACTIVE

(12) Reciprocating Brayton Cycle. To determine the feasibility of a reciprocating Brayton Cycle for automobiles and meet anti-pollution requirements without a fuel consumption penalty, or the need to junk existing tooling for present engines. J.S. Fox, Dept. of Mechanical Engineering. HRIS 53-107445 ACTIVE

12. IDAHO

a. Idaho Department of Transportation, Division of Highways: P.O. Box 7129, 3211 State Street, Boise, 83707

(1) Calculator Program for Selecting the Locations, Grades and Lengths of Gravel Bed Truck Escape Ramps. To develop easy to use programmable desk calculator program as a design aid for such ramps. A.F. Stanley. HRIS 21-192681 ACTIVE

(2) Asphalt Cement Characteristics and Quality Evaluation. To determine asphalt properties of all grades of asphalt from all sources and evaluate significance for pavement performance. A.F. Stanley. HRIS 24-102020 (Citations) COMPLETE

(3) Evaluation of a Sacrificial Type Cathodic Protection System for Bridge Deck Reinforcement. An effectiveness evaluation of a full-scale protection system. R.B. Jarvis. HRIS 25-153664 ACTIVE

(4) Reducing Corrosion of Reinforcing Steel in Concrete Bridge Decks. A laboratory investigation of the effectiveness of various corrosion inhibitors, either as additives to the concrete mix, or as post-construction penetrating surface treatments. J. Cosho. HRIS 34-177597 ACTIVE

(5) Fatal Accident Reporting System. To establish a research-oriented file of highway fatalities in support of the Alcohol Countermeasures Program. H. Pember. HRIS 51-177599 ACTIVE

(6) Traffic Records System Transferability Model Master Plan Development Project. To develop a model traffic records system plan utilizing transferability. D. Tonning. HRIS 51-177594 INACTIVE

c. University of Idaho: Moscow, 83843

(1) LASH and Other Intermodal Services in the Pacific Northwest Export Distribution System. To identify potential economics to be obtained from movement of variously identified agricultural and forest products that could be moved via the Columbia-Snake navigation system into overseas markets by such intermodal systems as LASH, standard intermodal containers and ocean-going barges. J.R. Jones. Dept. of Agricultural Economics. HRIS 15-153666 (Citations) ACTIVE

12. IDAHO (contd)

c. (2) Economic Potential of Selected Coordinated Intermodal Services in the Pacific Northwest Agricultural Export Distribution System. A study of the various methods of transporting agricultural products to overseas destinations, and development of a least-cost model for certain products. J.R. Jones Dept. of Agricultural Economics. HRIS 16-177601 (Citations) ACTIVE

(3) Fugitive Dust Emissions. To measure the emission of this dust caused by heavy trucks operating on unpaved roads, the climatological, road surface, vehicle and traffic conditions, and incorporate these variables in a model to predict emission rates. G.H. Belt, Forestry and Wildlife. HRIS 17-195926 ACTIVE

(4) Rehabilitation of Denuded Sites Through Containerized Seedlings. A study of the field survival and growth rate of Ponderosa Pine seedlings planted in six different types of containers, and the development of intermittent dibble-type container planter and field tests thereof. W.L. Moden, F.H. Pitkin, Agricultural Experiment Station. HRIS 23-101176 (Citations) ACTIVE

(5) Rational Spring-Thaw Load Limits for Idaho Highways. The use of stress, strain and deflection information to evaluate early fall pavement conditions, and use this as a reference basis for rational load reduction during the spring-thaw condition J.H. Hardcastle, R.P. Lottman, College of Engineering. HRIS 24-177600 (Citations) COMPLETE

(6) Practical Laboratory Measurement and Application of Stiffness or Resilient Properties of Soils and Granular Base Materials for Idaho Flexible Pavement Design Procedures. To develop a laboratory method for determination of stiffness and correlate these properties to predict deflections of flexible pavements. R.P. Lottman, Dept. of Civil Engineering. HRIS 62-082125 (Citations) COMPLETE

d. Idaho State Department of Health and Welfare: State Office Building, 700 West State Street, Boise, 83720

(1) Services for Problem Drinking Drivers. To provide community oriented basic services to individuals referred through the criminal justice system because of drinking and driving. C.E. Burn. HRIS 51-153670 ACTIVE

13. ILLINOIS

a. Illinois Department of Transportation: 126 East Ash Street, Springfield, 62706

(1) Implementation and Operation of Fatality Analysis File. To establish research-oriented File in support of the Alcohol Countermeasures Program and a means of evaluating the program. HRIS 11-038070 ACTIVE

(2) Technology Transfer to Reduce Highway Costs. To review policies, practices, standards and specifications for design and construction and identify areas in which cost reductions are possible through better utilization of existing technology. W.E. Chastain. HRIS 15-153691 ACTIVE

(3) Load Response Characteristics of Flexible Pavements. To develop a knowledge of and a capability for predicting this response. P.G. Dierstein, J.E. LaCroix. HRIS 24-134058 ACTIVE

(4) Continuously Reinforced Concrete Pavement. To determine behavior and economic feasibility of such pavement and develop design criteria. P.G. Dierstein, J.S. Dhamrait. HRIS 24-101258 (Citations) ACTIVE

(5) All-Weather Crete HI-45 as a Highway Insulating Material. An evaluation of this material ability to control frost penetration and determine effect of the insulation on pavement performance. D.D. Fowler, I.C. Mascunana. HRIS 24-102085 (Citations) COMPLETE

13. ILLINOIS (contd)

a. (6) PCC Pavement Texturing. An evaluation of several methods of applying texture in relation to its skid resistance behavior. P.G. Dierstein. HRIS 24-134962 ACTIVE

(7) Testing and Evaluation of Improved Incident Detection Algorithms. Determination of efficiency of detectors developed elsewhere and compare their performance in Chicago with locally developed models. G. Krause, M. Levin. HRIS 24-134972 ACTIVE

(8) Pavement Friction Inventory. To provide continuing skid resistance measurements at high accident locations. J.L. Davidson. HRIS 24-153684 ACTIVE

(9) Evaluation of Condition of Longitudinal Steel in Continuously Reinforced Concrete Pavements. To determine extent of steel corrosion at transverse cracks and corresponding affect on serviceability of crc pavements. Dierstein. HRIS 24-192694 ACTIVE

(10) Zinc Anodes to Control Deck Deterioration. To evaluate the effectiveness of a cathodic protection system using buried zinc anodes to control rebar corrosion. J.L. Saner. HRIS 25-082148 ACTIVE

(11) An Investigation of Elastometric Expansion Bearings for Highway Bridges. Evaluation of performance of terafluoreothylene fluorocarbon resin faced elastomeric expansion bearings as abutment bearings. F.K. Jacobsen. HRIS 25-102781 (Citations) COMPLETE

(12) Induced Trench Culvert Under High Fill. To determine behavior of a concrete box culvert installed by the induced trench method. F.K. Jacobsen. HRIS 25-101067 ACTIVE

(13) An Investigation of Plastic Pipe for Storm Sewer. To evaluate acrylonitrile-butadiene-styrene composite plastic pipe in terms of structural performance, durability, abrasion resistance, economy and ease of construction. D.D. Fowler, I.C. Mascunana. HRIS 34-134957 ACTIVE

(14) Field Evaluation of Microwave Patching System. Evaluation of microheating process for repairing concrete bridge decks and pavements under field conditions. P. G. Dierstein. HRIS 40-153677 ACTIVE

(15) An Investigation of a Frost Detection and Advance Warning System at a High Accident Bridge Location. An evaluation of the system at a bridge subject to unusual humidity conditions. HRIS 51-106233 COMPLETE

(16) Expressway Driver Information System. Evaluation of effect of a real-time traffic information system on travel characteristics of the freeway user. A.P. Cioffi, J.M. McDermott. HRIS 52-107916 ACTIVE

(17) Expressway Surveillance Project. To reduce congestion by means of automatic traffic control measures, improve traffic flow, and identify benefits. J.M. McDermott, M. Levin. HRIS 54-021247 (Citations) COMPLETE

(18) Testing and Evaluation of Ramp Control Strategies. An evaluation of applicable ramp control strategies and tactics in congestion situations and to develop control tactics for incident detections. M. Levin, J. Burdick. HRIS 54-177609 ACTIVE

(19) Stopped Vehicle Survey. An evaluation of a motorist aid phone system to determine degree of utilization and maintenance costs which led to an unimpressive benefit-cost ratio, and a comparison with the NEAR system. D.R. Schwartz, M. Levin. HRIS 55-177608 (Citations) COMPLETE

(20) Metal Shell Piles in Illinois Soils. To determine a workable relationship between theoretical and actual pile behavior in both cohesive and non-cohesive soils. F.K. Jacobsen. HRIS 62-020471 ACTIVE

13. ILLINOIS (contd)

a. (21) Granulated Calcined Clay in Landscaping. An evaluation of the performance of this clay as a soil conditioner and compare overall economy in using clay and peat moss as soil conditioners. D.D. Fowler. HRIS 64-110239 COMPLETE

b. Illinois State Geological Survey: Natural Resources Building, Urbana, 61801

(1) Sand and Gravel Resources of Illinois by Counties. To determine location, character, and extent of sand and gravel deposits and prepare maps delineating same. HRIS 61-108913 (Citations) ACTIVE

(2) Limestone Resources of Illinois by Counties. To provide information on the location, and characteristics of shallow limestone and dolomite strata. HRIS 61-108895 (Citations) ACTIVE

(3) Engineering Geology. A study of the relationship between geological conditions and engineering problems as related to highway and other types of construction. P.B. Dumontelle. HRIS 61-108644 (Citations) ACTIVE

(4) Petrology of Illinois Clays. Determine and catalogue the occurence, composition and properties of all clay materials in Illinois as a basis for their utilization. W.A. White. HRIS 61-108639 (Citations) ACTIVE

(5) Squeezing of Clays in Underground Mines. A study to determine conditions that cause some areas to fail and others to remain stable. W.A. White. HRIS 63-083809 ACTIVE

(6) Subsidence-Geological Studies for Mine Backfilling Projects, Southwestern Illinois. Determine site geology of abandoned mines so as to reduce or eliminate damage caused by subsidence. P. Dumontelle, E.D. McKay, S.R. Hunt. HRIS 63-192717 (Citations) ACTIVE

d. University of Illinois, Department of Materials Engineering: P.O. Box 4348, Chicago, 60680

(1) Prestress Concrete -- Optimum Design and Nonlinear Analysis. To identify ranges of values of design variables and parameters for which minimum cost design and minimum weight design lead to similar or different results and predict performance. A. E. Naaman, P. Siriaksorn. HRIS 25-134963 (Citations) ACTIVE

(2) Nonlinear Analysis of Reinforced Concrete Structural Members. To obtain ultimate strength design factors for high strength, normal and lightweight concrete. S.P. Shah, A.E. Naaman, F. Wang, S. Ahmed. HRIS 25-134960 (Citations) ACTIVE

(3) Ferrocement -- Fatigue Properties and Applications. To obtain information and develop design criteria for static and dynamic properties of ferrocrete and the relation between cracking and leakage when used in water tanks. S.P. Shah, A.E. Naaman, P. Balagura, A. Guerras. HRIS 32-134950 (Citations) ACTIVE

(4) Fiber Reinforced Concrete -- Mechanical, Fracture and Bond Properties. To investigate these properties on concrete reinforced with steel, glass and various organic fibers. S.P. Shah, A.E. Naaman, S. Somayaji, G. Velazco, M. Vecharatna. HRIS 32-104264 (Citations) ACTIVE

e. University of Illinois: Urbana, 61801

(1) Administration and Finance of Township Roads in Western Illinois. Study of existing administrative structure, financial practices pattern of investment, road condition, legal status of roads and areas in which management could be improved on township roads. S.K. Gove. HRIS 11-153671 ACTIVE

(2) Soil Landscape Characteristics Affecting Land Use Planning and Rural Development. To define, map and evaluate soil landscape units in terms of alternative land uses in rural and suburban areas and publish a guide for land use planning and development. B.W. Ray, J. B. Fehrenbacher, J.D. Alexander, J.J. Jansen. HRIS 12-110794 (Citations) ACTIVE

13. ILLINOIS (contd)

e. (3) Evaluation of Alternative Rural Freight Transportation, Storage and Distribution Systems. To estimate rural freight transportation requirements to 1985 and 1990 and the optimal transportation, storage and distribution system. L. D. Hill, L. Hoffman. HRIS 15-153674 ACTIVE

(4) Evaluation of Public Transportation Policies Affecting Agriculture. Assessment of the economic performance of the general-purpose transportation system for agriculture and the effect on efficiency and equity of proposed adjustments in services and rates. A.R. Bunker. HRIS 15-099647 (Citations) ACTIVE

(5) Impact of Changing Transportation Systems on Local Grain and Farm Supply Firms. An estimate of quantities of grain to be moved, demands for feed and fertilizer, determination of economic feasibility of alternative systems for such movements from 1975 to 1980. L.D. Hill. HRIS 15-083479 (Citations) ACTIVE

(6) System Analysis of the Economics of Grain Marketing. Determination of effects of changing farm programs on efficiency of marketing, utilization and distribution of certain farm products, implications of shipping patterns, including foreign markets. L.D. Hill, S.C. Schmidt, T.A. Hieronymus. HRIS 15-083481 (Citations) ACTIVE

(7) Grain Commodity Flow Study for Calendar Year 1977. To identify volumes of each grain moving in inter-and intrastate trade by mode of transport and by month. L.D. Smith. HRIS 16-192699 ACTIVE

(8) Alternative Structures for Increasing Efficiency in Inter-and Intra-Regional Grain Marketing Systems. To increase efficiency of marketing, transportation and processing by changes in institution, structures, and policies, and evaluate impact of alternative rate structures. L.D. Hill. HRIS 16-177618 ACTIVE

(9) Feasibility Study on Research of Local Design Storms. A feasibility study of procedures for computing local design storms for urban highway storm drainage design models. V.T. Chow. HRIS 22-153676 (Citations) ACTIVE

(10) Hydraulic and Hydrological Models of Components of Soil and Water Control Systems. To develop rainfall simulation and laboratory models to study micro-relief surface depression storage and find effects of roughness and rainfall variables on storage. W.D. Lembke. HRIS 22-100891 ACTIVE

(11) Causes and Control of Decline in Woody Plants along Roadsides. To identify the causes for decline and examine effect of various practices as they may relate to deterioration of woody plants. Himelick. HRIS 23-101247 ACTIVE

(12) Moisture Movement and Moisture Equilibria in Pavement Systems. To develop procedures for determining these factors and utilizing the information in pavement design. B. Dempsey. HRIS 24-101496 ACTIVE

(13) Steel Bridge Design Criteria to Help Minimize the Probability of Fracture. To establish better and more complete welding requirements and define limits of acceptability for various geometrical discontinuities and allowable stress. Munse. HRIS 25-153689 ACTIVE

(14) Kishwaukee River Bridge Study. A study of time-dependent deformations of cantilever erected segmental prestressed concrete bridges. W.L. Gamble, V. Marshall. HRIS 25-192702 ACTIVE

(15) Develop Design Recommendations for Concrete Tunnel Linings. To develop guidelines based upon ultimate strength concepts of concrete behavior. S.L. Paul, A. J. Hendron. HRIS 25-192690 ACTIVE

13. ILLINOIS (contd)

e. (16) Study of Field-made Joints in Prestressed Reinforced Concrete Highway Bridge Girders. To develop procedures for using segmental precast prestressed girders not longer than 90 feet as two-span continuous bridges with span of 125 feet. W. L. Gamble. HRIS 25-102901 ACTIVE

(17) Investigation of Reinforced Concrete Conduits. Theoretical and experimental study of conduits with multiple openings suitable for use under earth dams up to at least 250 feet, W. L. Gamble. HRIS 25-102868 (Citations) ACTIVE

(18) Structural Response under Random Wind Loading. To establish mathematical theory for structural response to random gusty wind in the along-wind and across-wind directions, apply stochastic stability concept to solve wind-induced instability problems, and investigate the vortex pattern of wind and its effect. Y.K. Lin. HRIS 25-177619 ACTIVE

(19) Field Investigation of Prestressed Reinforced Concrete Highway Bridges. To establish limits of confidence in calculating strength and time dependent deflections. M.A. Sozen, W.L. Gamble. HRIS 25-102224 (Citations) ACTIVE

(20) Stress History of Highway Bridges. Study of live-load stresses induced by high volume traffic and relate this to life expectancy of bridges. W.H. Walker, F.K. Jacobsen, R.K. Taylor. HRIS 25-020998 (Citations) ACTIVE

(21) Rehabilitation of Bridges on Local Roads. Determine properties of wrought iron and steel produced early in the century, study problems of welding it and develop a rapid means of distinguishing between wrought iron and steel. Stallmeyer. HRIS 25-192708 ACTIVE

(22) Structural Evaluation of Asphalt-Aggregate Cold Mix Bases. To provide practical solutions to the design and construction of asphalt-aggregate cold mix pavement bases. M. Herrin, M.I. Darter. HRIS 31-082144 (Citations) ACTIVE

(23) Application of the J-Integral to Fracture of Concretes. To determine if the J-integral is unduly influenced by specimen size and shape, its sensitivity to mix constituents and its significance for a particular concrete. C.E. Kesler. HRIS 32-179647 (Citations) ACTIVE

(24) Reaction of Calcium Silicates with Carbon Dioxide. A study of the mechanisms and kinetics of carbonation of calcium silicates and the microstructural effects of carbonated calcium silicate compacts on the properties of the hydration products. J. F. Young, A. Bentur. HRIS 32- 179595 ACTIVE

(25) Evaluation of the Fracture Behavior of Concrete with the J-Integral. To determine critical values of J from crack tip stretch, crack extension, and specimen failure criteria. C.E. Kesler, F.V. Lawrence. HRIS 32-192696 ACTIVE

(26) Probability of Fracture. Common-Objective Study. To establish better and more complete welding requirements for bridge steels of yield strengths ranging from 36 to 100 ksi and to define limits of acceptability for various geometrical discontinuities and allowable stress. HRIS 34-192715 Munse. ACTIVE

(27) Aggregate Characteristics Affecting Skid Resistance. Petrographic features and wear resistance and polishing characteristics of aggregates as related to skid resistance performance are studied. C.E. Kesler, R.L. Berger. HRIS 35-020371 (Citations) COMPLETE

(28) Optimum Maintenance Procedures for Continuously Reinforced Concrete Pavement. To determine types, severities, amounts and causes of distress in crc pavements and develop optimum maintenance procedures to repair distress and prevent occurances. M.I. Darter. HRIS 40-177612 (Citations) ACTIVE

13. ILLINOIS (contd)

e. (29) Noise and Vibration of Off-Road Equipment. A study of the mechanisms of noise generation, transmission and emission and the interrelationship between design and operating parameters, the vibrational response of off-road vehicles and the resulting operator environment. R.R. Yoerger, J. A. Weber, D.L. Hoag. HRIS 41-138391 (Citations) ACTIVE

(30) Improving Regional Population Health Status with Respect to Motor Vehicle Safety. To develop a planning methodology to assess health status of regions with respect to vehicular safety, and estimate reductions in injuries and deaths. J.S. Liebman HRIS 51-192700 ACTIVE

(31) Effects of Alcohol on Safe Driving Skills. To study the effects of alcohol in car driving and driving simulator tests, and effects of stress, motivation and task complexity. R.G. Mortimer. HRIS 52-192691 (Citations) ACTIVE

(32) The Effect of Alcohol on Safe Driving Skills. To obtain an improved understanding of the nature of changes in driving performance attributable to alcohol. R.G. Mortimer. HRIS 52-134910 ACTIVE

(33) Explaining Safety Helmet Use in Motorcycle Operators Using a Behavioral Model. To investigate motorcycle safety helmet use behavior using a social-psychological model for the prediction of behavioral intentions. J. Allegrante, R.G. Mortimer. HRIS 52-192697 ACTIVE

(34) Effects of Motorcycle Front Lighting Configurations on Distance, Velocity and Gap Acceptance Judgements. To evaluate the effects of added front marker lamps, in addition to the headlamp, on judgements of motorists. R. Mortimer. HRIS 52-177611 ACTIVE

(35) Field Test Evaluation of Rear Lighting Deceleration Signals. To devise three ways of displaying vehicle magnitude of braking by means of rear signal lamps. R. G. Mortimer HRIS 53-059887 ACTIVE

(36) Improvements in Tunnel Design and Construction -- Ground Movement Studies. Field observations of settlements and lateral ground movements, compared with construction conditions in tunnels in order to evaluate the causes of ground movements. E. J. Cording. HRIS 61-177616 (Citations) ACTIVE

(37) Studies in Tunnel Design and Construction Analysis and Field Measurements. Measurement of ground movements around twin and single tunnels in soft ground and correlation with ground conditions and construction procedures. E.J. Cording. HRIS 61-177617 (Citations) ACTIVE

(38) Instrumentation of Tunnels and Braced Excavations of the Washington Metropolitan Area Transit Authority. Measurements of ground movements and lining behavior during construction of tunnels, large rock chambers and braced excavations. E.J. Cording, W.H. Hansmire, T.D. O'Rourke, J.W. Mahar, R.A. Jones HRIS 61-082170 ACTIVE

(39) Soil-Water Properties of Subgrade Soils. To determine such properties as characteristic curves, hydraulic conductivity, water diffusivity, and demonstrate how these can be used to predict the moisture regime in subgrade soils. B.J. Dempsey HRIS 62-192714 ACTIVE

(40) Subgrade Stability. To determine required levels of stability and develop recommendations and procedures for more adequate consideration of stability during design stage. M.R. Thompson, J.L. Figueroa, T.C. Kinney, M.L. Traylor. HRIS 62-134940 ACTIVE

13. ILLINOIS (contd)

e. (41) Highway Problems - Illinois Cooperative Highway Research Program. To provide staff and facilities for the general administration and supervision of all projects in the Program and for exploratory studies in new areas. M. Herrin. HRIS 90-134919 ACTIVE

f. Northwestern University: Evanston, 60201

(1) Control of Service Reliability in Bus Transit Networks. A study of system performance and transit reliability upon which control actions must be based in order to improve service and reliability. M. Turnquist. HRIS 12-177622 ACTIVE

(2) Empirical Estimation of a Probabalistic Residential Location Model and Application to Value Capture Joint Development Policies. To develop a framework for the integrated forecasting of travel demand and residential property values. A. Anas. HRIS 12-192693 (Citations) ACTIVE

(3) Network Reliability in Urban Transit. A study of reliability in urban bus transit, with models developed to assess effectiveness of various control strategies to improve reliability. M.A. Turnquist. HRIS 12-153685 COMPLETE

(4) A Mathematical Theory of Travel in a Space Time Framework. To develop alternate travel demand models for broad range of transportation policies, including social engineering as well as forecasting. P. Burnett S. Hanson. W. Brog. HRIS 13-192704 (Citations) ACTIVE

(5) Intercity Passenger Transportation. To describe for each mode of intercity passenger transportation its true cost characteristics. HRIS 15-026899 ACTIVE

(6) Consumer Oriented Transportation Service Planning. To develop a consumer-oriented approach, based on applied market and consumer demand research to help governments satisfy public transportation needs within local communities. F.S. Koppleman. HRIS 15-059342 ACTIVE

(7) Productivity in Transportation and Piecemeal Deregulation of the Industry. A study of the effect that deregulation of transportation would have on energy, service and rates, and competition among modes. L.N. Moses. HRIS 15-128852 ACTIVE

(8) Uncertainty and Geographical Expansion of Transport Systems. To derive operational measures and evaluation criteria for planning expansion of transport networks. P. O. Sullivan, G. Barber. HRIS 15-177621 (Citations) ACTIVE

(9) Transportation Energy Consumption and Urban Form Relationship. To develop an analytical tool for assessing this relationship, utilize it to examine the relationship for a number of land use patterns, and identify policy options to affect land use and transportation systems. J.L. Schofer. HRIS 17-058490 (Citations) COMPLETE

(10) Mathematical Models for Inelasticity and Failure of Concrete. To develop constitutive relations for nonlinear triaxial behavior of concrete creep and moisture transfer at high temperatures, using endochronic theory as well as classical plasticity. Z.P. Bazant. HRIS 32-179598 ACTIVE

(11) Geographic Decomposition of Transport Networks. To examine the decomposability of these networks, so if regions within the network can be identified, it is possible that the evaluation of network optimization can be accomplished with a considerable reduction in computational effort. P. O'Sullivan, G. Barber. HRIS 55-177620 (Citations) ACTIVE

13. ILLINOIS (contd)

g. Southern Illinois University, Safety Center: Carbondale, 62901

(1) Advanced Driver Education. To develop a viable training curriculum and program for those engaged in emergency driving activities. J.E. Aaron. HRIS 51-134943 ACTIVE

(2) Advanced Driver Education - School Bus Driver. To train these drivers and their supervisors in emergency evasive driving techniques. E.A. James. HRIS 51-177633 ACTIVE

(3) Motorcycle Safety Project. To conduct and evaluate motorcycle rider training courses for high school and college students, general public and driver license examiners. J.E. Aaron. HRIS 51-192705 ACTIVE

(4) Emergency Evasive Driving Program. To conduct and evaluate this program for police, fireman, ambulance drivers and teachers engaged in emergency driving and rescue work. J.E. Aaron. HRIS 51-192692 ACTIVE

(5) An Exploratory Project to Determine Research Needs in Driver and Safety Education. To determine areas of needed research. J.E. Aaron. HRIS 51-106239 ACTIVE

i. Chicago Department of Public Works: Chicago, 60602

(1) Reduction of Crime on Transit Properties. To limit and deter crime on transit vehicles, stations, and loading zones, removing fear and thus remove a barrier to use of public transit. HRIS 51-038719 ACTIVE

j. ITT Research Institute: 10 West 35th Street, Chicago, 60616

(1) Study of Feasibility of Locating Utilities in Transportation Tunnels. To investigate the various types of utility lines most suitable for inclusion in a cut-and-cover transportation tunnel, and analyze economics, technical and institutional factors involved. P.J. Huck. HRIS 21-048930 (Citations) ACTIVE

(2) Improvement of Concrete and Aggregate with Sulfur Impregnation. A study of the utilization of sulfur to improve the resistance of concrete to freeze-thaw deterioration and corrosion caused by deicing chemicals. E. Alishin. HRIS 32-177606 ACTIVE

(3) A Study of High-pressure Water Jets for Highway Surface Maintenance. To transfer high-pressure jet technology developed in tunneling studies to possible use in highway maintenance. T. Labus. HRIS 40-153690 COMPLETE

(4) Toxic Effect of Automobile Exhaust Components. The use of laboratory mice to determine toxic effects of the various substances produced in automobile exhausts. J. Fenters, R. Ehrlich. HRIS 52-179584 ACTIVE

m. National Safety Council: 444 North Michigan Avenue, Chicago, 60611

(1) Annual Winter Driving Hazards Test Program. To evaluate winter driving hazards, motor vehicle equipment and traction aids. HRIS 51-082159 (Citations) ACTIVE

(2) Highway Safety Manpower and Training. To provide guidelines and recommendations for governmental agencies and educational and training institutions concerned with highway safety manpower development. HRIS 51-082165 ACTIVE

(3) Comprehensive Traffic Safety Program Development. To provide officials engaged in traffic safety programming with a master plan for reducing accidents and resulting deaths, injuries, property damage and their costs. R. Tipple, R. Winsor. HRIS 51-082164 (Citations) ACTIVE

13. ILLINOIS (contd)

m. (4) Highway Safety Program Analysis (HSPA). To prepare a guide for states and local jurisdictions in fulfilling the requirements of the 1966 Safety Act. R. Tippie, R. Winsor. HRIS 51-106235 ACTIVE

n. Portland Cement Association: 5420 Old Orchard Road, Skokie, 60076

(1) Spalling of Bridge Decks due to Corrosion of Steel. To develop new methods for construction to prevent development of spalling, and determine most effective way to repair existing decks, and inhibit further spalling. D. Stark, D. Whiting, W. Perenchio, P. Klieger. HRIS 24-134970 ACTIVE

(2) Significance of Pavement Design and Materials on D-Cracking. Field evaluation of an experimental pavement, with such variables as aggregate moisture barriers, subbase, shoulders, joints, sealers, etc. Stark. HRIS 24-192712 ACTIVE

(3) Load Tests of Thick PCC Pavements. An evaluation of load response of thick pcc pavements now in service. B.E. Colley. HRIS 24-192703 ACTIVE

(4) Denny Creek Bridge. To determine the behavior of selected representative span, noting stress distribution caused by creep, shrinkage and post-tensioning. J. D. Aristzabal—Ochoa. HRIS 25-192688 ACTIVE

(5) Time-Dependent Behavior of Segmental Cantilever Concrete Bridges. To determine this behavior by field trial, laboratory study and evaluation of measured against calculated deformations. K.N. Shiu. HRIS 25-177628 ACTIVE

(6) Fatigue Tests of Full-size Prestressed Girders. To determine effect of repetitive loading on the behavior and strength of girders with draped and blanketed strands. B. G. Rabbat. HRIS 35-153675 (Citations) COMPLETE

(7) Long-Time Fatigue of High Yield Reinforcing Bars. To determine fatigue properties of Grade 60 reinforcing bars at stresses near the fatigue limit. HRIS 25-134959 ACTIVE

(8) Pavement Resurfacing. Testing of simulated deteriorated concrete pavement with concrete overlays for resistance to repetitive loads and climate changes. B. E. Colley. HRIS 32-104135 ACTIVE

(9) Alkali-Aggregate Reaction in Concrete. To establish a basis for permitting higher alkali cements in various applications where potentially harmful reactive aggregates are utilized. D. Stark, D. Whiting, P. Kleiger. HRIS 32-134944 ACTIVE

(10) Influence of Environment and Materials on D-Cracking. To measure moisture movements in pavements and slabs, determine effectiveness of altering aggregate sources, grading and quantity. Kleiger. HRIS 32-153681 COMPLETE

q. American Public Works Association: 1313 East Sixtieth Street, Chicago, 60637

(1) Computer-Assisted Mapping and Records Activities System Program (CAMRAS). To map and locate underground utilities through a common map base in Memphis, and show such information as land use, zoning, utility distribution, drainage, hydrology, housing, etc. G. Hinkle, W. Bathke. HRIS 11-153673 ACTIVE

s. Atlantic Richfield Company, 400 E. Subley Boulevard, Harvey, 60426

(1) Fuels Research. Evaluation of fuel blends and additive systems to maximize use of available materials under present and anticipated future operating and environmental conditions. F. J. Chloupek. HRIS 17-134916 ACTIVE

13. ILLINOIS (contd)

s. (2) Lubricants Research. To develop new lubricating systems for engines operating under current and anticipated fuel and environmental limitations. F.J. Chloupek. HRIS 53-177603 ACTIVE

aa. Illinois State Department of Conservation, 605 State Office Building, 400 South Spring Street, Springfield, 62706

(1) Management of Roadside Cover for Nesting Songbirds. To evaluate the nesting of songbirds in roadside vegetation. R.E. Warner. HRIS 23-153682 ACTIVE

ad. Phillips and Associates, Incorporated: 44 White Court, Canton, 61520

(1) Computerized Information Flow, Based on Logical Selections of Construction Materials and Construction Methods. To assist decision making in the selection of methods and materials for construction. C.W. Phillips. HRIS 33-177605 ACTIVE

(2) Details on Microfiche, A Drawing Retrieval System for Construction. To provide a system whereby standard construction drawings and related data are placed on microfiche for ready retrieval, either for viewing or for inclusion in construction documents. C.W. Phillips, W.F. Phillips. HRIS 33-134907 ACTIVE

ae. Standard Oil Company of Indiana, Fuels Division: Box 400, Naperville, 60540

(1) Construction of Pulse Flame Catalyst Testing System and Tests on Emission Catalysts. To develop a pulse flame combustor to simulate automotive exhaust gases and use such gases to test emission catalysts. G. H. Mequerian. HRIS 34-179585 ACTIVE

14. INDIANA

a. Indiana State Highway Commission: 100 North Senate Avenue, Indianapolis, 46204

(1) Production Scheduling and Control. To establish on a continuing basis an advanced scheduling process, to improve project status reporting, coordination between planning and improvements. D.R. McCutchan. HRIS 11-100002 ACTIVE

(2) Development of a System for the Evaluation of Pavements. To set up guidelines for pavement evaluation using the road meter, dynaflect and skid tester. Yoder. HRIS 24-192721 ACTIVE

(3) Optimizing Indiana Pavement Systems. To investigate the effects of traffic wear and variations in seasonal climatic conditions on skid resistance characteristics of typical pavements. K.J. Kercher, B.L. Elkin. HRIS 24-153697 ACTIVE

(4) Evaluation of Rubber Expansion Joints for Bridges. Performance evaluation of various types of expansion joints over a five year period. B.L. Elkin, P.L. Owens. HRIS 34-020952 (Citations) ACTIVE

b. Indiana Department of Traffic Safety: 215 North Walnut Grove, Bllomington, 47401

(1) Fatality Analysis File. To establish a research-oriented file of highway fatalities in support of the Alcohol Countermeasures Program. HRIS 51-038861 ACTIVE

c. Indiana Geological Survey, Department of Natural Resources: 611 Walnut Grove, Bloomington 47401

(1) Mineral Resources of Silurian Reefs and Interreef Rocks. To provide information on the occurance and distribution of these materials as future sources of aggregate for road construction. C.H. Ault. HRIS 35-177634 ACTIVE

14. INDIANA (contd)

c. (2) Environmental Geology: Selected Areas. A study of the geology of parts of the State to learn special problems that could arise from pressure of population growth. H. Gray, N. Bleuer, J. Hill, E. Hartke, C. Ault. HRIS 61-109492 ACTIVE

(3) Characteristics of Indiana Tills. To sample these tills and determine mineralogic content and physical properties. N. Bleuer. HRIS 61-109491 ACTIVE

(4) Geologic Map of the 1 Degree Times 2 Degree Indianapolis Quadrangle, Showing Bedrock and Unconsolidated Deposits. To revise the 1961 map and to map geology of both bedrock and unconsolidated (surficial) deposits of a 7500 square mile area of Indiana and Illinois. H. Gray. HRIS 61-082202 ACTIVE

d. University of Indiana: Bloomington, 47401

(1) Northwest Indiana Corridor Study. To determine appropriate transportation service to meet needs of travel for residents in the South Bend to Chicago corridor. D. Shlay. HRIS 12-153696 ACTIVE

(2) Rapid Response Generation of Highway Crash Data. To develop a system for providing answers to accident cause questions within ninety days. D.M. Goldenbaum, J.R. Treat, R.J. Ripberger. HRIS 51-038472 (Citations) COMPLETE

(3) National Crash Severity Study (NCSS). A probability sample of police-reported towaway accidents, covering those hospitalized, deaths, injuries, etc. N.S. Tumbas, M.P.A. Tumbas. HRIS 51-160038 ACTIVE

(4) Comparative Analysis of Alcohol Highway Safety Judicial Standards and Existing Professional Standards. Analysis and comparison of existing standards for dealing with drivers arrested for driving while intoxicated and how they impact judicial functions. J.A. Palmer. HRIS 51-192720 COMPLETE

(5) Accident Causation Methodology Development for the National Accident Sampling System. To develop a methodology to help in uncovering cause of accidents, and in developing standards and countermeasures aimed at reducing accident frequency. J. R. Treat, D. Zaidel, R.W. Harris, M. Squires. HRIS 51-192718 ACTIVE

(6) A Survey of Current Radiological Emergency Response Capabilities for Transportation Related Incidents. To assemble and condense available information on current state emergency response capabilities to transportation related radiological incidents. F. J. Vilardo. HRIS 51-192732 ACTIVE

(7) Methodology for Evaluating Motor Vehicle Pre-crash Factors. To assist in development of analytical methodology in determining priorities of accident problems, countermeasures and evaluating impact of such countermeasures. J.R. Treaty, D.A. Zaiell, R.D. Hume. HRIS 51-192728 ACTIVE

(8) Requirements Analysis for Heavy Vehicle Driver Licensing. To assist in development of truck driver licensing requirements. R.W. Harris. HRIS 51-192730 ACTIVE

(9) Feasibility of Developing a Training Program Designed to Improve Deficient Driver Factors. Review of available data to determine extent that human factors data can be utilized to develop instructional objectives and priorities. R.D. Hume HRIS 51-192726 COMPLETE

(10) Driver Performance and Individual Differences in Attention and Information Processing. Literature review and assessment of implications of inattention definitions, identification of personal, environmental and vehicular circumstances associated with inattention-type accidents. D.M. Zaidel, D. Shinar, W.T. Paarlberg. HRIS 52-192722 (Citations) COMPLETE

14. INDIANA (contd)

g. Purdue and Indiana State Highway Commission Joint Highway Research Project: Civil Engineering Building, Purdue University, West Lafayette, 47907

(1) Performance of Pipe Culverts Buried in Soil. To develop an analytical procedure for deformable culvert structures, incorporating essential characteristics of soil structure interaction during the in-service functioning of the culvert. G.A. Leonards, M.B. Roy. HRIS 22-101066 ACTIVE

(2) Superior Bluegrasses for Roadside Turf. To further the studies on experimental bluegrasses developed earlier, looking to increased seed production, planting, etc. W. H. Daniel, R.P. Freeborg. HRIS 23-101203 ACTIVE

(3) Bridge Vibration Studies. To develop a computer program for dynamic bridge analysis based on presently available techniques of analysis. M.J. Gutzwiller, R.H. Lee, P. Owens. HRIS 25-102931 ACTIVE

(4) Improvement of Non-durable Aggregates in Portland Cement Concrete. Benefication of non-durable freeze-thaw behavior of aggregates to permit their use in pcc. W.L. Dolch, D.N. Winslow. HRIS 35-134993 ACTIVE

(5) Improving Embankment Design and Performance. To determine the effects of the variability of compaction process upon the predictability of the engineering behavior of Indiana compacted soils. A.G. Altscgaeffl, C.W. Lovel, Jr., M. Essigmann, J.L. Peterson, J. Siebert, J.C. Scott. HRIS 62-082193 ACTIVE

(6) Design and Construction Guidelines for Shale Embankments. A survey of current experience to evaluate existing provisional guidelines. L.E. Wood, C.W. Lovell, Jr. W.J. Sisiliano. HRIS 62-109551 ACTIVE

h. Purdue University: Lafayette, 47907

(1) Erosion of Public Roads in Rural Areas: A study of Coal Haul Roads in East Kentucky. To examine the effects following deterioration of coal haul roads, determine efforts to remedy the situation and develop potential resolution within economic restraints that exist. V. Ostrom. HRIS 11-153692 ACTIVE

(2) Economic Analysis of the United States Grain Exporting. Evaluation of alternative inventory and export policies with respect to market efficiency, price stability, producer and consumer utility, effects on private trading system expert markets, and effects of embargoes. B.F. Jones. HRIS 15-083483 (Citations) ACTIVE

(3) International Trade and U.S. Agriculture. A study of the economic effects of existing and proposed trade policies, changes in agricultural production technology transportation, marketing, and demand changes. R.L. Thompson. HRIS 15-138395 (Citations) ACTIVE

(4) Evaluation of Design and Control Alternatives to Improve Safety of Intersections of Multi-lane Rural Highways. Determine seriousness of accidents at such intersections and develop alternative techniques to reduce same using simulation models. Radwan. HRIS 21-192724 ACTIVE

(5) Thin Applied Surfacing for Improving Skid Resistance of Concrete Pavements. Laboratory evaluation of aggregates and mix proportions to provide optimum microtexture for skid residence and study methods for applying thin surfacings. Scholer. HRIS 24-153698 ACTIVE

(6) Study of the Segmental Box Girder Bridge at Turkey Run. To monitor strain, bending, and temperature changes during and after construction and evaluate criteria for design of prestressed segmental box girder bridges. Sutton. HRIS 25-192733 ACTIVE

14. INDIANA (contd)

h. (7) Investigation of Recycling Bituminous Pavements, Experimental Construction Project. To develop guidelines for methods and equipment alternatives for recycling pavements, and then design and construct one in accordance with the guidelines. Wood. HRIS 31-192727 ACTIVE

(8) Low Porosity, High Strength Concrete for Bridge Decks. To determine the potential suitability of such concrete for long-lasting bridge decks. Diamond. HRIS 32-177636 ACTIVE

(9) Support for Fourth International Conference on the Effects of Alkalis in Cement and Concrete. To provide a forum for conferees invited on the basis of their expertise, activity and interest in research on this subject. S. Diamond. HRIS 32-192731 ACTIVE

(10) Rapid Non-destructive Evaluation of Highway Pavements. The use of a truck-mounted mobile device to make moving records of pavement deflections. Harr. HRIS 34-177637 ACTIVE

(11) Turfgrass Improvement. To develop all-weather performance of experimental turf that is low-growing, disease tolerant, increased seed development and spreading. W.H. Daniel. HRIS 40-138393 (Citations) ACTIVE

(12) Chemical Mowing: A New Maintenance Concept for Indiana Roadsides. To design a lowcost chemical mowing program for roadsides, to be long lasting, environmentally safe and non-injurious to the turf. Morre. HRIS 40-192719 ACTIVE

(13) Safety and Performance of Tractors and Machinery. A study of methods of reducing accidents and noise from tractors, to improving control, to conduct dynamic behavior of tractors, and improve traction. J.B. Liljedahl. HRIS 41-195920 (Citations) ACTIVE

(14) A Comprehensive Program on Rock Properties, Tunneling and Excavation Technology and Nuclear Blast Effects on Earth Media. To establish a data center on properties of geological substances of interest to the geosciences for useful applications and research concerned with use of underground space. Y.S. Touloukian. HRIS 63-115950 ACTIVE

r. University of Indiana: Indianapolis, 46402

(1) Truck, Bus, and Motorcycle Safety Status Methodology. To determine feasibility of surveying safety status of these vehicles and then develop and validate a methodology for surveying their conditions, cost-effectively. HRIS 51-059885 ACTIVE

t. Notre Dame University, School of Engineering: Notre Dame, 46556

(1) Earthquake Response and Aseismic Design of Underground Piping Systems. To investigate the earthquake response and earthquake-resistant design of underground piping systems utilized in energy transport. T. Ariman. HRIS 63-192723 ACTIVE

15. IOWA

a. Iowa Department of Transportation: Highway Division: 826 Lincoln Way, Ames, 50010

(1) Carpools Potential in Iowa -- Ames/Des Moines: A Case Study. To evaluate the potential for carpooling promotions. S.A. Rodrick, M.A. Sherty. HRIS 12-177647 ACTIVE

(2) Economic Impact Study. Analysis of changes in land values and business activities in communities where highway changes have taken place. E.R. Mills. HRIS 15-100236 ACTIVE

15. IOWA (contd)

a. (3) Investigation of Highway Lighting. An evaluation of tower lighting and conventional highway lighting. F. Christofferson, V.H. Marks. HRIS 21-106449 (Citations) COMPLETE

(4) Experimental Steel Fiber Reinforced Concrete Overlay. To determine feasibility of mixing, placing and finishing such overlays and determination of performance, longevity and maintenance characteristics. HRIS 24-104291 (Citations) ACTIVE

(5) Investigation of Pavement Wear in Relation of Use of Studded Snow Tires. To measure pavement wear caused by studded tires, estimate studded tire usage and possible future pavement damage. V.J. Marks. HRIS 24-105627 (Citations) ACTIVE

(6) Pavement Deflection Study. To determine the usefulness of a Road Rater in providing deflection data of sufficient accuracy to be used in design and calculation of overlay thickness. V. Marks. HRIS 24-135011 ACTIVE

(7) Recycled Asphalt Pavement, Kossuth County. To determine the feasibility of using conventional asphalt paving equipment to produce roads using recycled pavements. R.A. Shelquist. HRIS 24-135012 (Citations) ACTIVE

(8) Upgraded Asphalt Surface Friction by Aggregate Sprinkle Treatments. Determination of feasibility of using a standard asphalt mixture of local, less expansive aggregates for surface courses, followed by surface sprinkle treatments of pre-coated chips to produce durable, non-skid pavement surface. R.A. Shelquist. HRIS 24-177642 ACTIVE

(9) Maintenance of Pavement Skid Resistance. To investigate skid resistance of plant mix seals. R.A. Shelquist. HRIS 24-082108 ACTIVE

(10) Bridge Deck Delamination Study. To determine effectiveness of a Delamtect for detecting the delaminations of concrete bridge decks, including those resurfaced or constructed with a membrane. V. Marks. HRIS 24-135006 (Citations) COMPLETE

(11) An Evaluation of Cover Aggregate Stripping Characteristics. To identify the stripping susceptibility of various types of cover aggregates when used with both cut-back and emulsified asphalts. K. Isenberger, D. Jordison, D. Smith. HRIS 31-153705 ACTIVE

(12) Fly Ash in Portland Cement Concrete Pavement. To determine the problems related to shipping, storing, batching fly ash, and mixing and placing concrete using fly ash. C.E. Leonard. HRIS 32-192738 ACTIVE

(13) Recycling of Cass County I-80 Asphalt Concrete. To test handling, processing procedures, develop design criteria and evaluate performance of recycled material. R. A. Shelquist. HRIS 31-177662 (Citations) ACTIVE

(14) An Evaluation of Dense Bridge Floor Concrete. To determine feasibility of using a dense portland cement concrete using conventional equipment, as well as the economics, longevity, performance and protective qualities. T.W. Pratt. HRIS 32-177640 (Citations) ACTIVE

(15) Fly Ash in Portland Cement Concrete Pavement. To determine problems using fly ash in pavements and to demonstrate that concrete comparable to conventional can be produced. O.D. Ives. HRIS 32-192592 ACTIVE

(16) Evaluation of Air Pollution Control Devices for Asphalt Pavement Recycling Operations. To seek acceptable solutions to the air pollution problem created in the recycling process, using inexpensively modified conventional equipment. R. P. Henely. HRIS 33-177638 (Citations) ACTIVE

15. IOWA (contd)

a. (17) Joint Sealing with Various Sealants. To evaluate joint sealing procedures, such as cleaning, preparation and size of transverse sawed contraction joints. G. Hardy. HRIS 33-192740 ACTIVE

(18) The Evaluation of Macadam Stone Shoulders. To determine the feasibility of using macadam stone shoulders in place of standard paved shoulders, and evaluate the performance of them. R.A. Shelquist. HRIS 34-153706 ACTIVE

(19) Field Evaluation of Galvanized Reinforcing Steel in Bridge Decks. To compare galvanized rebars with standard rebars used in typical bridge deck construction. HRIS 34-104996 ACTIVE

(20) Concrete Bridge Deck Repairs using Injected Epoxy Resin. To investigate the use of such resin to seal delaminations. E. J. O'Connor. HRIS 40-135007 ACTIVE

(21) Dust Control Using an Asphalt Emulsion. To evaluate the application procedure and performance of a cationic asphalt emulsion dust control system and find a cost effective method of meeting dust control regulations. V. J. Marks. HRIS 40-177641 (Citations) COMPLETE

(22) Intersection Lighting and Accidents. A study of the relationship between accidents and lighting at intersections and interchanges. V.J. Marks HRIS 51-082111 (Citations) COMPLETE

(23) Safety Effectiveness of a Roof Mounted Running Light and Repeater Signal System. To test the accident reduction capability of a supplemental roof mounted lighting system. S.A. Rodrick, N.M.M. Casey, B. Eberhardt. HRIS 53-177645 ACTIVE

(24) Evaluation of an Epoxy Pavement Marking System. To determine if epoxy paints are an economical alternative to standard paint on high-traffic multi-lane roadways, and if they will last an entire winter without replacement. J.H. Moody HRIS 54-153704 ACTIVE

(25) Determination of Rumble Strip Effectiveness. To determine the effectiveness of the rumble strip as a traffic safety device in rural and urban stop condition situations. G.L. Fox, S. Basu. HRIS 54-153700 ACTIVE

b. Iowa State Department of Public Safety: Lucas State Office Building, Des Moines, 50319

(1) Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program, and a means of evaluating the program. M. M. Sellers. HRIS 51-038068 ACTIVE

d. Iowa State University: Ames, 50010

(1) The Role of the States in Federal Transportation Regulatory Reform. To determine how the positions of the States are communicated to the Federal Government on changes in transportation regulatory actions. W.H. Thompson, D. Vellenga, D. Voorhees. HRIS 11-192741 ACTIVE

(2) Impact of Iowa Taxes. A study of taxation in Iowa, impacts on various groups and alternatives available. A.A. Paulsen, C.W. Meyer, M. G. Julius. HRIS 14-138396 COMPLETE

(3) Evaluation of Alternative Rural Freight Transportation Storage and Distribution Systems. To estimate the requirements to 1985 and 1990, estimate the optimal system, and evaluate economic effects of alternative governmental policies. C. P. Baumel. HRIS 15-153703 ACTIVE

15. IOWA (contd)

d. (4) Intercity Passenger Carrier Improvement Study. To recommend specific changes relating to service by intercity buses and third level air carriers. R.L. Carstens, R. A. Brewer, S.L. Ring. HRIS 15-153708 COMPLETE

(5) Iowa Coal Transportation Systems. To obtain computer solutions for alternative coal transportation and distribution systems for supplying coal to major Iowa users. C. P. Baumel. HRIS 15-192739 ACTIVE

(6) Travel Decision Behavior. To examine the process by which individuals and households make decisions regarding travel under environmental uncertainties. K.A. Brewer. HRIS 16-192743 ACTIVE

(7) Distribution of Wheel Loads on Alaskan Native Log Stringer Bridges. To evaluate the load characteristics of these bridges and develop design criteria to more accurately show behavior of this type bridge. W. W. Sanders, Jr. HRIS 25-153702 ACTIVE

(8) Field Tests of Slurry Seal Coats. To evaluate performance of Iowa materials in slurry seals. D.Y. Lee. HRIS 31-177652 ACTIVE

(9) Modification of Asphalts and Asphalt Paving Mixtures by Sulphur Additives. Evaluation of the effects of added sulphur or sulphur-polymer on properties of asphalts and mixtures. D.Y. Lee HRIS 31-103590 (Citations) COMPLETE

(10) Fatigue Behavior of Composite and Surface Treated Concretes. A study of the flexural fatigue of concrete treated with sulphur and polymer-impregnations or overlaid with latex, polymer or low-water-cement ratio concrete. D.Y. Lee, F. W. Klaiber. HRIS 32-177649 ACTIVE

(11) Waste Oil Shale in Highway Construction. To evaluate properties of retorted oil as subgrade and aggregate in pavements. D.Y. Lee HRIS 34-177651 (Citations) COMPLETE

(12) Fatigue Behavior of Aluminum Alloy Weldments. To develop a state-of-the-art report on fatigue behavior of aluminum alloy weldments. W. W. Sanders, Jr. HRIS 34-192737 ACTIVE

(13) Waste Dredging Material in Construction. To investigate the use of sand dredged from the navigation channel of the Upper Mississippi River as fine aggregate for pavements. D. Y. Lee. HRIS 34-192744 (Citations) ACTIVE

(14) Special Tests for Dust Abatement and Road Stabilization. Study of method, equipment and products available for dust control and stabilization. J.M. Hoover, R. L. Handy. HRIS 40-105658 (Citations) COMPLETE

(15) Portable School Stop Signs and Other Non-uniform School Stop Control Devices. To determine the advantages and disadvantages compared with alternative forms of control. R. L. Carstens. HRIS 54-177655 COMPLETE

(16) Mathematical Modelling of Lœss. To develop a model for prediction of relative thickness and engineering properties of loess. R.L. Handy. HRIS 61-177654 (Citations) ACTIVE

(17) Strength and Structure of Laterites and Lateric Soils. Study of shear strength and related engineering properties of tropical soils in relation to environmental, mineralogical and physical-chemical factors. R. A. Lohnes, T. Demirel. HRIS 61-108899 COMPLETE

(18) Downhole Rock Borehole Shear Tester. To develop a rapid borehole shear type rock tester for use inside deep holes bored from ground surface. R.L. Handy. HRIS 61-192735 ACTIVE

15. IOWA (contd)

d. (19) Mission-Oriented Dust Control and Surface Improvement Processes for Unpaved Roads. Study of methods, equipment and materials for dust control on Iowa roads. J. M. Hoover. HRIS 62-177653 ACTIVE

(20) Evaluation of Changes in Productivity Resulting from Removal of Soil for Highway Construction. To evaluate the changes in cropland productivity resulting from soil removal for highway construction. W. D. Shrader. HRIS 64-177656 (Citations) ACTIVE

(21) Soil-Aggregate-Fabric Systems in Frost Susceptible Secondary Roads. Evaluation of performance of Mivafi 140 fabric in secondary roads overlying frost-susceptible fine grained subgrades. J.M. Hoover. HRIS 64-153711 COMPLETE

(22) Safer Construction and Maintenance Practices to Minimize Potential Liability by Counties from Highway Accidents. To establish the magnitude of tort claims relating to alleged deficiencies in construction and maintenance. R.L. Carstens. HRIS 70-192742 ACTIVE

e. University of Iowa: Iowa City, 52242

(1) Psychometric Approaches to Modeling Mode Choice. The use of mathematical models to assess the role psychophysical factors play in modal selection, between combinations of fares, headways and distance to a busstop. HRIS 11-110532 (Citations) COMPLETE

(2) UMTA Research and Training Grant. Investigations of theoretical and practical problems in urban transportation and provide training for persons to carry out such investigations. HRIS 11-110548 (Citations) COMPLETE

(3) The Potential of Carpool and Vanpools in Iowa. A comparison and evaluation of various methods of pooling matching. K. J. Dueker. HRIS 12-177657 COMPLETE

(4) Transportation Needs of the Handicapped. To determine needs for transportation and the means of responding to the needs. M. Kihl. K. Dueker. HRIS 12-177646 ACTIVE

(5) Development and Test of Mathematical Models of Traveler Perceptions and Decisions. To obtain a better understanding of the decision-making process of commuters in order to enhance transport policy and marketing. I.P. Levin. HRIS 13-192734 ACTIVE

(6) Evaluation of the Impacts of Federal Transportation Programs in Small Urban Areas. An evaluation of urban transportation financing in general, with particular reference to Federal programs. K. J. Dueker. HRIS 14-177659 COMPLETE

(7) Transportation Needs of the Handicapped in Iowa. To identify and locate the handicapped and analyze their needs for transportation, the extent to which these needs are met, and identify alternative types of service. K.J. Dueker, T. Kane, M. Rockwell. HRIS 15-177658 COMPLETE

(8) Impact of Suburban Development on Drainage Networks. To study the problems arising from this development, and develop relationships which specify the changes in drainage that accompany suburbanization and develop predictive data. W. L. Graf. HRIS 22-135005 (Citations) COMPLETE

(9) Preliminary Archaeological Investigation along Proposed Right-of-Way. To identify probable sites of archaeological value well in advance of highway construction without resorting to excavation or other detailed examination. M. McKusick. HRIS 33-177661 ACTIVE

15. IOWA (contd)

j. Cytronics Incorporated: P. O. Box 392, Ames, 50010

(1) Development of a Minicomputer Controlled Frost, Ice and Snow Detector for Bridge Hazard Monitoring. To develop such a device that will be accurate in the presence of deicing chemicals under normal conditions. P. W. Poppe. HRIS 51-153701 ACTIVE

16. KANSAS

a. Kansas Department of Transportation: State Office Building, Topeka, 66612

(1) Reduction of Reflective Cracking in Flexible Pavements with Stress Absorbing Interlayer Membranes. To evaluate the long term effectiveness of these membranes. R. G. Maag. HRIS 24-192750 ACTIVE

(2) Portland Cement Concrete Pavement Deterioration Study. To determine the extent, causes, repairs and means of prevention in future work of this deterioration. C.H. Best, J.E. Bukovatz, C.F. Crumpton. HRIS 24-021240 (Citations) ACTIVE

(3) Design Prediction of Pavement Skid Resistance from Laboratory Tests. To develop methods for pre-evaluating aggregates and paving mixtures so as to determine skid resistance properties. R.G. Maag, F.W. Stratton, T.M. Metheny, W. H. Parcells, Jr., HRIS 24-135019 ACTIVE

(4) Study of Fatigue Damage of Overhead Sign Supports and High Light Towers. To determine effects of wind-induced fatigue on these structures. R.D. Seitz, F.L. Utter. HRIS 25-102905 ACTIVE

(5) Cold In-place Recycling of Bituminous Pavements. To evaluate this method of rehabilitating deteriorated road-mix bituminous pavements. R.G. Maag, N. P. Woodruff. HRIS 31-192745 ACTIVE

(6) Electro-Osmotic Techniques for Removal of Chloride from Concrete and Emplacement of Concrete Sealants. To develop a method of removing or complexing chloride ions in concrete by this technique. J.E. Bukovatz, G.L. Morrison, F. W. Stratton. HRIS 32-104336 (Citations) ACTIVE

(7) Cracked Structural Concrete Repair through Epoxy Injection and Rebar Insertion. To develop a method for repairing failed girders with injection epoxy and new rebar installation. F.W. Stratton, R. Alexander, W. Nolting. HRIS 40-135018. (Citations) COMPLETE

(8) Implementation and Operation of Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program, and a means of evaluating the program. L. Gifford. HRIS 51-038662 ACTIVE

(9) Soil Surveys. To provide information for each county on soil surveys that can be useful in design and construction of engineering projects. G.N. Clark, W. H. Parcells, Jr. HRIS 61-108634 ACTIVE

(10) Water Drainage from In-place Fills to Prevent or Halt Fill Slides. To determine the conditions leading to fill slides and develop means of preventing or halting such slides. P.C. Clark, J.D. Wineland, C.F. Crumpton, W. Gilliland. HRIS 63-110093 (Citations) COMPLETE

b. Kansas State University, Manhattan, 66506

(1) Evaluation of Public Transportation Policies Affecting Agriculture. Assessment of the economic performance of the general purpose transportation system for agriculture and the effect of proposed adjustments in services and rates. K.L. Casavant. HRIS 11-138370 (Citations) ACTIVE

16. KANSAS (contd)

b. (2) Investigation and Development of a Statewide Traffic Assignment Model for Kansas. To develop a model for traffic assignment that will reproduce data in a form adequate for use at various technical and public meetings. E.R. Russell. HRIS 12-135020 COMPLETE

(3) Evaluation of Alternative Rural Freight Transportation Storage and Distribution Systems. To estimate rural freight transportation requirements to 1985 and 1990, estimate optimal systems, and evaluate economic effects of alternate railroad ownership and financial policies. L. O. Sorenson. HRIS 15-153718 ACTIVE

(4) Appraisal of Capability of Transportation System to Meet Needs of Agriculture and Rural Areas. Determine effectiveness of the system to meet demands and its capacity to move inputs economically under full production policy, and to consider effects of sharply increased exports. L. D. Schnake. HRIS 15-099628 (Citations) ACTIVE

(5) The Economics of Product Assembly and Distribution. To develop economic knowledge concerning relationships between costs and physical handling of farm products. L.W. Schruben. HRIS 15-100472 ACTIVE

(6) Effects of Web Openings in Composite Beams. To determine behavior and strength of composite concrete slab-structural steel beams with web openings. P.B. Cooper, S.E. Swartz. HRIS 25-179599 ACTIVE

(7) Moisture and Heat Treatment in Concrete. To develop an analytical model that will predict energy required to generate temperature gradients to cause internal moisture to be forced from concrete. C.L. Huang, C.H. Best. HRIS 32-177664 (Citations) ACTIVE

(8) Impact of Changing Transportation Systems on Local Grains and Farm Supply Firms. Study of the quantities of grain, fertilizer and feed that will have to move through the transportation system in 1975 and 1980, by counties and determine facilities needed to handle as well as alternative methods. L.O. Sorenson, J.H. McCoy. HRIS 90-083488 (Citations) ACTIVE

c. Center for Research, University of Kansas: 2291 Irving Hill Road, Lawrence, 66045

(1) Application of Satellite Remote Sensing to Resource Management and Environmental Quality Programs to Local, State and Regional Agencies. To assist these agencies in the use of data gathered by this sensing. B.G. Barr, E.A. Martino. HRIS 17-082210 ACTIVE

(2) Hydraulic Design Curves for Standard Depressed Curb Inlets. To develop these curves based on model experiments. Y.S. Yu, R.D. Seitz, S. Kaul. HRIS 22-101051 (Citations) ACTIVE

(3) Joint Soil Moisture Experiment. To determine sensor design criteria for future air-borne or space radar, radiometer or combined sensing systems, and to determine the effectiveness of them. F.T. Ulaby. HRIS 64-082209 ACTIVE

e. Kansas Gas and Electric Company: 120 East First Street, Box 208, Wichita 67202

(1) Develop Load Research Data and Operating Experience with an Electric Vehicle. To assist electric utilities in planning for a significant number of electric road vehicles in the 1980's. G.L. Koester. HRIS 53-153716 ACTIVE

f. University of Kansas: Kansas City, 66103

(1) Impact of Motorcycle Helmet Usage in Kansas. Assess the effect of legislation that removes requirement that protective helmets be worn by motorcycle riders on public roads. HRIS 51-160222 ACTIVE

17. KENTUCKY

a. Kentucky Department of Transportation, Bureau of Highways: 533 South Limestone, Frankfort 40622

(1) Evaluation of Economic Growth Centers Developmental Highways. A study of the effectiveness of these highways, based on before and after studies, using socio-economic evaluation guidelines. J. G. Pigman. HRIS 15-100446 (Citations) ACTIVE

(2) Noise Abatement. Noise measurements on some 10, 500 vehicles operating on selected highways representing varied geometric and environmental conditions and posted speed limits. K. R. Agent, C.V. Zegeer. HRIS 17-108513 (Citations) ACTIVE

(3) Propagation of Traffic Noise. To obtain a better understanding of noise propagation so that more accurate prediction models may be developed. K.R. Agent, C.V. Zegeer. HRIS 17-135072 ACTIVE

(4) Evaluation of Experimental Crash Cushions. To determine the effectiveness of these cushions by before and after analyses of each accident involved. J.G. Pigman, HRIS 21-135065 ACTIVE

(5) Effect of Geometrics and Operations on Accidents. A series of studies of accidents as related to the spot improvement program, pedestrians, flashing beacons, access control, bridges, etc. K.R. Agent, C.V. Zegeer. HRIS 21-100775 (Citations) ACTIVE

(6) Subsurface Drainage System for Highway Pavements. To study the use of a subsurface drainage layer to remove excess water and contribute to pavement strength. D. C. Newberry, H.F. Southgate, R. C. Deen. HRIS 22-153729 ACTIVE

(7) Sprinkle-Treatment for Bituminous Concrete Surfaces. Experimental installation to study an overlay treatment method in accordance with an FHWA Demonstration Project, using four non-polishing aggregates, and compared with standard bituminous concrete limestone surface. J.H. Havens, D. C. Newberry, Jr. HRIS 24-192757 ACTIVE

(8) Correlation of Pavement Skid Resistance with Qualities of Sand. To correlate inherent properties of sands with their skid resistance and develop specification requirements for aggregates which will assure skid-resistant sand-surfaces. J.H. Havens, D.C. Newberry. HRIS 24-020373 (Citations) ACTIVE

(9) Road Roughness Performance of Pavements. To identify factors contributing to increased roughness and obtain measurements of profiles throughout service life for different classes of Kentucky roads. J.L. Burchett, T.A. Moore. HRIS 24-153727 ACTIVE

(10) An Investigation of Low Cylinder Strengths. To determine the causes for high percentages of low-strength concrete cylinders and evaluate corresponding in-situ concrete for soundness and adequacy. A.S. Rahal, V.W. Azevedo HRIS 25-153724 (Citations) COMPLETE

(11) Full-Depth Asphaltic Concrete Pavements. To determine the mechanical response of an in-service experimental pavement to static and dynamic loads and observe the pavement under traffic. J. H. Havens, H. F. Southgate, R. C. Deen. HRIS 24-101440 (Citations) ACTIVE

(12) Development of a Rational Overlay Design Method for Pavements. To develop an asphaltic concrete overlay thickness design system for both asphaltic and portland cement concrete pavements. J. H. Havens, H.F. Southgate, D.C. Newberry, R. C. Deen. HRIS 24-135060 (Citations) ACTIVE

17. KENTUCKY (contd)

a. (13) Road Roughness and Serviceability Investigations. To obtain quantitative data on the profiles of various pavement types at different ages and measure accelerations of a passenger in an automobile traversing these profiles. J. H. Havens, R.L. Rizenbergs, J. O. Burchett. HRIS 24-101556. (Citations) ACTIVE

(14) Pavement Roughness and Serviceability Surveys. To make roughness tests and assign priorities for resurfacing, and to measure roughness of new and resurfacing projects in order to assess workmanship. J.L. Burchett. HRIS 24-102040 ACTIVE

(15) Pavement Slipperiness Studies: Pavement Performance Surveys and High Accident Location Testing. To conduct skid resistance surveys to aid in establishing resurfacing priorities and investigate high accident locations which are slippery when wet, J.L. Burchett. HRIS 24-102041 (Citations) ACTIVE

(16) Dynamic Truck Load Surveys for Pavement and Bridge Fatigue Analysis. To analyze traffic and weight data using weigh -in-motion system, for both pavement and bridge fatigue analyses. H.F. Southgate. HRIS 24-135063 ACTIVE

(17) Dynamic Testing of Pavement Structures for Maintenance Requirements. To develop test and evaluate procedures to detect weak zones and facilitate short-range and long-range maintenance scheduling. H.F. Southgate. HRIS 24-135062 ACTIVE

(18) Evaluation of Experimental Pavement Surfaces. To evaluate experimental methods or systems proposed for upgrading pavement service. J.H. Havens, D. C. Newberry, Jr. HRIS 24-192753 ACTIVE

(19) Determination of Flexible Pavement Rutting Behavior. To determine where and to what extent rutting occurs, develop a mathematical relationship between permanent deformation, temperature, time and load. D.L. Allen. HRIS 24-102012 (Citations) ACTIVE

(20) Wet-Surface Accidents and Their Relation to Pavement Friction. To determine the relationship between pavement skid resistance and wet-surface accidents. J. L. Burchett, R.L. Rizenbergs, L. A. Warren. HRIS 24-135074 ACTIVE

(21) Concrete Shoulders. To evaluate design, construction, maintenance and performance of pcc and bituminous concrete shoulders adjacent to mainline pavements. W. V. Azeredo, A. S. Rahal. HRIS 24-101452 (Citations) ACTIVE

(22) Optimization of the Adequacy Rating Program. To evaluate the Kentucky rating program and recommend improvements. C. V. Zegeer, R.L. Rizenbergs. HRIS 24-135071 COMPLETE

(23) Optimal Transportation Investments for Fiscal Planning by Dynamic Programming. To develop a dynamic programming procedure using economic analyses to assist in optimizing expenditures in pavement resurfacing programs. C.V. Zegeer, K. R. Agent. HRIS 24-135070 (Citations) ACTIVE

(24) Investigation of the Effects of Gradation and Compaction on the Performance of Crushed Stone Base Courses. To design and use crushed stone bases that do not remain constantly saturated, do not rut due to pavement pumping, and prevent or minimize rutting at the subgrade crushed stone interface. J.H. Havens, H. F. Southgate, D. C. Newberry, Allen, R. C. Deen. HRIS 24-135068 ACTIVE

(25) Evaluation of Waterproofing Membranes on Concrete Decks. To monitor, evaluate and document construction and performance of waterproofing membranes on concrete bridge decks. A. Rahal, W. V. Azevedo. HRIS 25-102944 ACTIVE

17. KENTUCKY (contd)

a. (26) Bridge Decks Specially Constructed for Increased Durability. To modify conventional design and construction practices and monitor performance to ascertain if the modifications economically yield increased durability. J. H. Havens, A. S. Rahal. HRIS 25-102810 (Citations) ACTIVE

(27) Experimental Use of Epoxy Coated Reinforcing Steel in Bridge Decks. To determine the performance of such steel in bridge decks as a means of minimizing deterioration. A. Rahal, W. V. Azevedo. HRIS 25-102943 ACTIVE

(28) Voidless Concrete Mixtures for Bridge Decks. Laboratory experimentation with various mixtures of nonevaporable liquids to produce voidless concrete, including the use of wax beads to seal the concrete internally. A.S. Rahal. HRIS 32-104256 (Citations) ACTIVE

(29) Corrosion Resistance of Culvert Materials. To determine the effectiveness of various coating materials to resist the action of acid waters. J. H. Havens. HRIS 34-104748 ACTIVE

(30) Products Evaluation. To test and evaluate new products or those which have not been approved. H. F. Southgate. HRIS 34-105072 ACTIVE

(31) Engineering Properties and Uses of Kentucky Shales. To determine these properties and classify them for different engineering uses in highway construction T. C. Hopkins, B. Gilpin, R. C. Deen. HRIS 34-135064 ACTIVE

(32) Discarded Tires in Highway Construction. To study a surface treatment prepared with reclaimed rubber from discarded tires. J. H. Havens, D. C. Newberry, Jr. HRIS 34-192752 FUTURE

(33) Heating Coils in Pavements and Bridge Decks. To determine effectiveness and efficiency of an automated snow and ice removal system for bridge decks. J. H. Havens, A. S. Rahal, W. V. Azevedo. HRIS 40-105649 (Citations) ACTIVE

(34) Analysis of Evaluation of Near-miss Accidents. To analyze near-miss accidents of a control group and determine how this type of information may be used to prevent accidents. J. G. Pigman. HRIS 51-135058 (Citations) ACTIVE

(35) Safety and Design Innovations for Bicycle Travel. To investigate bicycle-related accidents and establish design guidelines and operational procedures in building bicycle trails and multi-modal routes in urban areas. J.G. Pigman, C.V. Zegeer, K. R. Agent. HRIS 51-153728 (Citations) COMPLETE

(36) Evaluation and Application of Traffic Conflict Techniques. Determine relationship between accidents and conflicts, correlate conflict types with improvement needs and develop conflict levels at which locations have high accident potential. C. V. Zegeer. HRIS 51-153723 (Citations) COMPLETE

(37) Interstate Safety Improvement Program. To develop guidelines for this program with the objective of reducing the number and severity of accidents. J.G. Pigman, K. R. Agent, C.V. Zegeer. HRIS 51-177665 (Citations) ACTIVE

(38) Characteristics of High-Risk Driver. To determine the differences in characteristics between these drivers and those not involved in accidents or receiving traffic citations. K.R. Agent. HRIS 52-135059 (Citations) ACTIVE

(39) Development of Warrants for Separate Left-turn Lanes and Signal Phasing. To develop these warrants as a guide for installation of left-turn lanes. K.R. Agent. HRIS 54-135061 (Citations) ACTIVE

17. KENTUCKY (contd)

a. (40) Improved Traffic Flow Through Innovations in Traffic Signal Systems. Study of signal coordination by computerization, reversible lanes as means to improve traffic flow. K. R. Agent. HRIS 54-192754 ACTIVE

(41) Evaluation of Green Signal Phase Extension Systems. A study of the reduction of accidents and the effect on traffic delay at signalized intersection before and after installation of green-extension lights. C. V. Zegeer. HRIS 54-135066 COMPLETE

(42) Evaluation and Application of Roadway Delineation Techniques. A review of existing delineation techniques applicable to nighttime and adverse weather visibility conditions and recommend improved methods. J. G. Pigman, K.R. Agent. HRIS 54-106431 (Citations) ACTIVE

(43) Evaluation of Rumble Strip Design and Usage. To develop standards for design and application of rumble strips. J. G. Pigman. HRIS 54-135067 ACTIVE

(44) Characteristics of Traffic Streams - Rural Multilane Facilities. Develop a methodology for predicting traffic characteristics, determination of interrelationships between design, maintenance, operational criteria. J. G. Pigman. HRIS 55-107266 (Citations) ACTIVE

(45) Investigations of Traffic Flow and Safety Characteristics, Relationships and Parameters. To investigate these features in order to provide maximum levels of service and a safe driving environment. J. G. Pigman, D. R. Herd, K. R. Agent. HRIS 55-135069 (Citations) ACTIVE

(46) Engineering Geology. To prepare engineering-geology reports for use by engineers, based on maps, laboratory tests, studies of soil and rock properties. J. H. Havens, R. C. Deen, T. C. Hopkins, W. J. Pfakzer. HRIS 61-108635 (Citations) ACTIVE

(47) Controlled Rate of Strain and Controlled Gradient Consolidation Testing. To develop a simple strain-rate selection procedure and standard method for the constant-rate-of-strain (CRS) consolidation test. C. T. Gorman, T.C. Hopkins, R. C. Deen. HRIS 61-108940 (Citations) ACTIVE

(48) Soil-Bridge Abutment Interaction. A study of the movements of bridge abutments as associated with settlement of embankment materials and pile bending stresses. J. H. Havens, D. A. Allen, J. E. Black. HRIS 62-109502 ACTIVE

(49) Settlement of Bridge Approaches and Embankments. To determine causes of this settlement and develop methods of design and construction whereby it may be prevented. R. C. Deen, T. C. Hopkins. HRIS 62-020022 (Citations) ACTIVE

(50) Soil-Bridge Abutment Interaction. Field instrumentation for before and during construction to measure movements and pressures at the abutment, the piling and the adjacent soil. Houchin. HRIS 63-192756 ACTIVE

(51) Landslides. To determine cause of side-hill instability, observe long-term movement, develop an automated direct shear apparatus, develop correlations between laboratory triaxial shear strength and in situ shear and compare in situ measurements with calculated values. C. T. Gorman, T. C. Hopkins, R. C. Deen. HRIS 63-110081 (Citations) ACTIVE

(52) Loads on Box Culverts under High Embankments. To evaluate factors effecting load configurations, adequacy and economy of design methods, and the reliability of the imperfect trench in reducing loads. D. L. Allen, E. G. McNulty. HRIS 63-110082 (Citations) ACTIVE

17. KENTUCKY (contd)

a. (53) Slope Stability Analysis. A comparison of previously developed methods for determining slope stability and to develop a computer based program using the most accurate method. T. C. Hopkins. J. G. Mayes, R. C. Deen. HRIS 63-109474 (Citations) ACTIVE

d. Kentucky Research Foundation, University of Kentucky: Bowman Hall, Lexington, 40506

(1) Coal Slurry Pipelines. To develop a coal collection and transportation system utilizing slurry pipelines. D. T. Y. Kao. HRIS 15-153721 (Citations) ACTIVE

(2) Effects of Pavement Permeability and Hydodynamic Drainage on Wet Pavement Skid Resistance. Studies of drainage of pavement surfaces and hydroplaning or skidding. J. W. Hutchinson, T. Y. Kao, J. G. Rose. HRIS 24-101951 (Citations) ACTIVE

(3) Determination of Sediment Filtration Efficiency of Grass Media and Engineering Criteria for Optimum Grass Filter Design. A study of the effect of various alternating grass filter arrangements on efficiency of sediment trapping. D. T. Y. Kao, B. J. Barfield. HRIS 40-153722 (Citations) ACTIVE

e. Council of State Governments: Lexington, 40511

(1) Preparation and Dissemination of a Model Non-resident Violator's Compact. To reduce inconvenience to non-resident motorists cited for non-serious traffic violations, and non-productive law enforcement time spent processing these violations and suggest model legislation. HRIS 51-160207 ACTIVE

f. University of Kentucky: Lexington, 40506

(1) National Crash Severity Study. Participation in the National Highway Traffic Safety Administration's National Crash Severity Study, based on probability sample of police-reported towaway accidents. HRIS 51-160178 ACTIVE

(2) Accident Analysis -- Breakaway and Non-breakaway Poles, Including Sign and Light Standards along Highways. To identify the extent of pole accident problems determine accident and severity rates, evaluate performance and cost effectiveness and injury severity reduction of the breakaway poles. J.W. Hutchinson R. V. Sayre, E. F. Pantzer. HRIS 51-153720 (Citations) ACTIVE

g. Kentucky Department of Natural Resources: Capital Plaza Tower, Frankfort, 40622

(1) Demonstration of Coal Mine Haul Road Sediment Control Techniques. A study of haul road concepts that would improve environmental aspects in construction and drainage concepts, water quality and soil stability. B. Fish, J. Martin, L. Adams. HRIS 17-192751 ACTIVE

h. Kentucky State Department of Education: Capital Plaza Towers, Frankfort, 40601

(1) Transportation Investment Impact Analysis. A study of the present and future benefits of the Appalachian Regional Commission highway corridor system and how best to utilize the system in development of highway related industrial, commercial and housing sites. HRIS 15-179581 ACTIVE

18. LOUISIANA

a. Louisiana Department of Transportation and Development: P. O. Box 44245, Capitol Station. Baton Rouge, 70804

(1) Support Study for the Effects of Highway Noise on Residential Property Values. To provide necessary expertise in noise analysis for the main study. G. H. Cramer, II, L. S. Bourgeois. HRIS 17-192775 COMPLETE

(2) Evaluation of a Reef Shell Embankment Bridging Marshland Soils. To investigate the feasibility of constructing such an embankment directly in situ and compare subsidence characteristics with those of a clam shell embankment and determine traffic support capability. J. L. Melancon. HRIS 21-100793 ACTIVE

(3) The Effects and Evaluation of Water Quality Resulting from Highway Development and Operations. This is a support study for a project of the Federal Highway Administration on the subject. G. H. Cramer, II. HRIS 21-153731 INACTIVE

(4) The Effects of Elevated Construction on Water Pollution. To determine the effects of such construction on water quality. G. H. Cramer, II., M. E. Ewing. HRIS 22-153732 ACTIVE

(5) Statistical Evaluations of Rainfall-Simulator and Erosion Testing Procedures. To document the statistical repeatability of the rainfall simulator previously developed. S. M. Law. HRIS 23-135080 COMPLETE

(6) Louisiana Experimental Base Project. To determine the accuracy of predictions concerning performance and serviceability of flexible pavements. J. W. Lyon. HRIS 24-102079 ACTIVE

(7) Development of New Criteria for Smoothness of Asphaltic Concrete Surfaces. To determine a method for controlling the surface smoothness of asphaltic concrete pavement during construction which will result in a smooth riding surface. S. C. Shah. HRIS 24-102021 (Citations) INACTIVE

(8) Evaluation of Full Depth Asphalt Concrete Pavements. To evaluate the full depth pavement design concept by observing performance over an extended period of time. W. H. Temple. HRIS 24-102022 (Citations) ACTIVE

(9) Installation of Compression Seals for NCHRP Project 4-9A. To install, inspect and periodically sample some 48 neoprene seals in pcc. W.H. Temple. HRIS 24-102056 COMPLETE

(10) Performance Evaluation of Louisiana's AASHTO Satellite Test Sections. To determine if the design assumptions are valid and whether they are in need of modification. W. H. Temple. HRIS 24-192770 (Citations) COMPLETE

(11) Protection Effectiveness of Waterproof Membrane Systems on Bridge Decks. A study of membrane effectiveness under Louisiana conditions. J. E. Ross. HRIS 25-177669 ACTIVE

(12) Control of Hot Mix Production by Cold Feed Only. To study the feasibility of controlling the gradation and physical characteristics of bituminous mixtures in a screenless plant. L.A. Glascok, D.E. Carey. HRIS 31-082217 (Citations) COMPLETE

(13) Asphalt Cement Consistency Study, Phases I and III. A comparative evaluation of durability and field performance of penetration and viscosity graded asphalt cements from four suppliers. S.C. Shah. HRIS 31-021256 INACTIVE

(14) Asphalt Concrete Overlays of Rigid and Flexible Pavements. To develop a design procedure for determining overlay thickness to rehabilitate existing pavements. Wilson. HRIS 31-192758 ACTIVE

18. LOUISIANA (contd)

a. (15) Effects of Asphalt Rejuvenation Agents. To become familiar with several such agents for use in recycling operations. D.E. Carey, L.D. Lay. HRIS 31-192760 INACTIVE

(16) Design and Test Properties using Super Water Reducers in Portland Cement Concrete. To determine properties of concrete using Super Water reducers with materials from Louisiana, mixed and evaluated under Louisiana conditions. J. E. Ross. HRIS 32-177670 ACTIVE

(17) Pozzolan Cement Study. Observation of concrete pavement using this cement in a one-day paving operation to determine compression, flexure, abrasion-skid, roughness and performance. J.E. Ross. HRIS 32-192772 ACTIVE

(18) Texturing of Concrete Pavements. To document and evaluate the findings of a Category II experimental concrete texturing project. J. E. Ross. HRIS 32-102058 ACTIVE

(19) Polymer Modified Concrete Study. Comparative testing for four products for strength, abrasion resistance, volume change, set time, chloride permeability and freeze-thaw resistance after various curing ages. J.E. Ross. HRIS 32-192771 ACTIVE

(20) Evaluation of Statistically Oriented End-Result Specifications. To review data generated by projects constructed under the statistically oriented system of specifications for asphaltic and portland cement concrete. S.C. Shah. HRIS 33-135078 (Citations) INACTIVE

(21) Procedural Research for Reporting of Materials Test Data using Computer Systems. To remedy the burdensome method of manually reporting and filing construction materials test data by using computerized storage and retrieval techniques. S. C. Shah, V. Yoches, J. J. Hirschmann. HRIS 33-020892 (Citations) ACTIVE

(22) Evaluation of Water Based Inorganic Zinc Paint Systems. To develop specifications and application techniques for these paints. H. W. Lacinak, Jr. HRIS 33-153733 INACTIVE

(23) Hot Plant Recycling of Asphaltic Concrete. Investigation of design and construction procedures for recycling asphalt concrete in both regular batch and dryer drum plants. D. E. Carey. HRIS 33-192766 ACTIVE

(24) Evaluation of Drainage Pipe by Field Experimentation and Supplemental Laboratory Experimentation. An investigation of corrosion properties of various types of metal drainage structures. R. W. Kinchen, W. H. Temple. HRIS 34-105056 (Citations) ACTIVE

(25) Evaluation of Zinc Coating Procedures. To determine the relative protection against corrosion offered by various methods of zinc coating. K.L. McMichael, H. W. Lacinak. HRIS 34-105097 (Citations) ACTIVE

(26) Evaluation of Interior and Exterior Latex Paints. To find a number of highly qualified latex paints and develop rapid methods of evaluation. S.A. Rathe. HRIS 34-105115 (Citations) ACTIVE

(27) Quantitative X-ray Diffraction and Fluorescence Analysis of Paint Pigment Systems. To establish calibration curves for correlation of x-ray intensity with concentration of each pigment in a paint pigment matrix. K.L. McMichael R. W. Williams. HRIS 34-153735 INACTIVE

(28) Optimization of Salt Fog Conditions for Organic Zinc Paints. To develop more reliable accelerated testing program for organic zinc-rich coating systems. McMichael. HRIS 34-192769 ACTIVE

18. LOUISIANA (contd)

a. (29) Determination of Shell Content by Activation Analysis. To determine the feasibility of determining shell content, in a sand/shell mixture, by use of neutron activation analysis technique. J.L. Melancon. HRIS 35-153730 ACTIVE

(30) Blended Aggregate Study. To ascertain the feasibility of blending highly skid resistant aggregates with aggregates of lesser quality to obtain asphaltic concrete overlays with acceptable skid resistance. R. S. Allen, J.T. Ashby, Jr. HRIS 35-177671 ACTIVE

(31) Evaluation of Graded Limestone Base Course. To determine the ability to construct such a base course and the time and traffic-related support to be provided thereby, W.H. Temple. HRIS 35-192761 FUTURE

(32) Asphaltic Concrete Overlays of Rigid and Flexible Pavements. To establish a design procedure for determining thickness, to rehabilitate pavements, and establish method of predicting life on existing hot mix overlaid pavements, R. W. Kinchen, W. H. Temple. HRIS 40-105638 (Citations) ACTIVE

(33) Investigation of Accident Reduction by Grooved Concrete Pavement. To evaluate the effectiveness of grooved pavement for accident reduction. W. C. Walters, J. D. Bennett. HRIS 51-102062 (Citations) ACTIVE

(34) Advance Traffic Control Warning System for Maintenance Operations. To evaluate the effects of the system on traffic flow and driver alertness under various traffic and maintenance operations. S. C. Shah, G.L. Ray, D. W. Babin. HRIS 54-107978 (Citations) INACTIVE

(35) Diagrammatic Sign Evaluation. To evaluate the effectiveness of a diagrammatic sign in advance of Interstate interchanges. Babin. HRIS 54-192759 ACTIVE

(36) Settlement Study. Correlation of field studies with theoretical settlement predictions. W. C. Walters. HRIS 62-021392 ACTIVE

(37) Evaluation of an Asphalt-Treated Drainage Blanket in a Rigid Pavement Section. To develop a permeable, but stable, asphalt-treated layered drainage system, for draining water from highway bases and subbases. W.H. Temple. HRIS 63-101024 (Citations) INACTIVE

b. Louisiana Highway Safety Commission: P. O. Box 44061, Capitol Station, Baton Rouge, 70804

(1) Fatal Accident Reporting System (FARS). To establish a statistical file of data to provide periodic reports describing the accident environment, trace countermeasure programs and an evaluation of problems and programs. H.Kling. HRIS 51-192762 ACTIVE

c. Louisiana State University: Baton Rouge, 70803

(1) Establishment of Ground Cover for Non-mowable and Locked-in Areas on Interstate Highways. To establish low-growing dwarf species of ground cover, with low maintenance requirements that can be rapidly established in hard or impossible to mow areas. R. J. Stadtheer, D. W. Newsome. HIRS 23-101227 (Citations) ACTIVE

(2) Feasibility of Development of a Portable Nuclear Density Guage for Determining the Density of Plastic Concrete at a Particular Stratum. To develop a single or dual probe nuclear guage to determine degree of consolidation of concrete. Iddings. HRIS 32-192763 ACTIVE

(3) Gap-Graded Concrete Study. A comparison of performance of gap-graded and continuously graded concrete mixes. W. O. Hadley. HRIS 32-082354 (Citations) COMPLETE

18. LOUISIANA (contd)

c. (4) Effect of Sampling Techniques in Undisturbed Samples. To review current sampling techniques and determine their effects on design, recommend new methods where desirable. A. Arman, J.K. Poplin. HRIS 34-020478 (Citations) COMPLETE

(5) Highway Maintenance Simulation Model. A computer model to assist in management of highway maintenance operations. Pruett. HRIS 40-192765 ACTIVE

(6) Motorcycle Helmet Study. A study of the effect of the repeal if the requirement that motorcycle riders must wear helmets. O.K. Dart, Jr. HRIS 51-192767 ACTIVE

(7) Effects of Energy Constraints and Conservation Measures on Transportation of People in Urban Areas. To study the effects of current and future energy profiles by transportation mode, in urban areas on transportation systems. O.K. Dart, Jr., L. Manning, Jr. HRIS 54-135077 COMPLETE

(8) Field Calibration of Electric Cone Penetrometers in Soft Soils. To develop reliable estimates of undrained shear strength in cohesive soils. Mehmet. HRIS 61-192764 ACTIVE

(9) Computer Program for Soil Exploration. To develop a program to assist the engineer in determining soil exploration patterns, depths, etc. J. Arnold, A. Arman. HRIS 61-135076 ACTIVE

(10) In-Situ Testing of Soils as Applied to Pile Foundations. To investigate feasibility of using field vane shear device for determination of pile lengths in soft soils. A. Arman, J. K. Poplin. HRIS 64-135079 (Citations) ACTIVE

d. Louisiana Technical University, Department of Civil Engineering: Ruston, 71270

(1) Fundamental Properties of Engineering Construction Materials. A detailed study of materials and testing procedures used by the State for highway construction. W. O. Hadley. HRIS 31-177672 ACTIVE

f. Tulane University: 6823 Saint Charles Avenue, New Orleans, 70118

(1) Preliminary Research - Lulin Bridge Instrumentation. Preliminary work involved in selecting equipment and methods for the future study. Bruce. HRIS 25-192773 ACTIVE

i. M. J. Derbes, Incorporated: 1954 Poydras Street, New Orleans, 70112

(1) Effects of Highway Noise on Residential Property Values. To assess the effect of highway noise on residential property values in the State. M.J. Derbes, Jr., C. T. Dowell, III. HRIS 52-177667 (Citations) COMPLETE

j. Experienced Resource Group Incorporated: 9572 Mammoth Drive, Baton Rouge, 70814

(1) Alternative Food Delivery Systems - An Exploratory Assessment. To provide a planning study to be used in setting priorities for future food delivery system related studies and provide an inventory of the data base related to delivery system for selected commodities. G. H. Miles. HRIS 15-177668 ACTIVE

k. Planning and Research Associates, Incorporated: 727 Spain Street, Baton Rouge, 70804

(1) Multidisciplinary Accident Investigation Team Study: Ran-off-the-Road, Fatal Accidents in Rural Areas of State Police Troop A. To determine why rural single vehicle ran-off-the-road fatal accidents occur in such increasingly large numbers. L. S. McKenzie, III HRIS 51-192768 ACTIVE

19. MAINE

a. Maine Department of Transportation: Transportation Building, Augusta, 04333

(1) Dynamic Pavement Deflections. To investigate the dynamic deflection under moving loads in respect to magnitude and configuration of the pavement deflection. K. Jacobs, D. Rand. HRIS 24-082231 ACTIVE

(2) Skid Resistance of Pavement. To determine the total sn error attributed to the skid resistance measuring unit. D. Madden. HRIS 24-020968 (Citations) COMPLETE

(3) Frictional Resistance of Pavement. Determine magnitude of seasonal variations in resistance, variations in wearing surface and effect of varying water discharge volumes. D. A. Madden. HRIS 24-177674 ACTIVE

(4) Comparison of Type I and Type II Portland Cements. To determine if Type I can be used in lieu of Type II, and the reactions with various admixtures. Stevens. HRIS 32-153738 COMPLETE

(5) Laboratory Investigation of Availability and Quality of Concrete Aggregate. To test and compile an inventory of quality concrete aggregates in Maine. R. Vallance. HRIS 35-192777 ACTIVE

(6) Field Evaluation of Diesel Pickup Truck Fuel Economy. To determine how much energy can be saved by using diesel instead of gasoline engines in lightweight trucks. HRIS 53-059694 ACTIVE

e. University of Maine: Orono, 04473

(1) Recreation Marketing Adjustments in the Northeast. Determine the extent to which perceived recreation marketing adjustments are taking place and how they relate to changing socioeconomic conditions, evaluate impact on regional economies. J. C. Whittaker. HRIS 15-192778 ACTIVE

(2) Ecological Impact of Freeway Construction in Northern Maine. Determine numbers and distribution of birds and animals near construction sites, and evaluate the impact of the highway construction. V. B. Richens. HRIS 17-082226 ACTIVE

(3) Harrington Salt Marsh Study. To evaluate the feasibility of a man-made salt marsh next to the existing salt marsh. R. Vadas HRIS 21-153740 ACTIVE

(4) Electrical Properties of Ice Solid Interfaces. To develop information which will contribute to a general theory of ice adhesion. P.R. Camp. HRIS 40-192776 (Citations) ACTIVE

(5) The Effects of Consolidation, Age, and Overlapping Leachate on the Permeability Characteristics of Papermill Sludge. An evaluation of this sludge for sanitary, transportation and other constructed facilities. R.E. Wardwell, J.A. Alexander. HRIS 63-153739 ACTIVE

20. MARYLAND

a. Maryland Department of Transportation, State Highway Administration: 2323 West Joppa Road, Brooklandville, 21022

(1) Training Film - Concrete Bridge Deck Construction. To emphasize inspection duties and responsibilities in bridge deck construction. P. Willing. HRIS 11-177686 (Citations) COMPLETE

(2) Training Film - Welding Inspection. To illustrate the proper welding and inspection techniques. F. S. Kinney. HRIS 11-192792 ACTIVE

20. MARYLAND (contd)

a. (3) Collection of Hydrological Data of Small Rural Drainage Areas. To provide reliable runoff information as affected by various hydrological areas of state, and their sizes. D.H. Carpenter. HRIS 22-100860 ACTIVE

(4) Field Evaluation of Type HV Grates for Highway Drainage. Determine performance of these grates and cost data analysis. HRIS 22-153753 ACTIVE

(5) Performance Study of the Bituminous Concrete Section of the JFK Expressway (I-95). To measure the structural adequacy of the resurfaced flexible pavement section with rebound deflection readings. L.D. Beck. HRIS 24-102008 ACTIVE

(6) Evaluation of Experimental Skid Resistant Mixes. To find the most skid and wear resistant bituminous surface courses, including plant mix seals, using locally available aggregates. G. N. Kariotis. HRIS 24-102009 (Citations) COMPLETE

(7) Rideability Equipment Evaluation. A testing of various methods and equipment for measuring road roughness and to develop better procedures for comparisons of road serviceability. C. E. Starkey, G. Crenson. HRIS 24-102011 (Citations) COMPLETE

(8) Evaluation of a Dynamic Load Inducing Device. To develop standard evaluation criteria using this device for rapidly determining structural adequacy for asphaltic concrete pavement. S. Miller HRIS 24-102076 COMPLETE

(9) Performance Study of Continuously Reinforced Concrete Pavement on I-95. An evaluation of this pavement, including cracks, joints, roughness, serviceability index, and skid resistance. G.N. Shah. HRIS 24-102077 COMPLETE

(10) Performance Study of Continuously Reinforced Concrete Pavement on I-70N. To determine performance, and also to investigate causes of failure in added CRCP shoulder lane. G.N. Shah. HRIS 24-102078 ACTIVE

(11) Evaluation of In-Service Behavior of Soil-Cement and Sand-Asphalt Bases. To determine effects of design criteria, construction control, traffic and climate on pavements using these materials. G.N. Shah. HRIS 24-192788 ACTIVE

(12) Field Evaluation of Expansion Joints for Bridges. Evaluation of three types of joints, based on service life, durability and cost. S.K. Mujal. HRIS 25-153751 ACTIVE

(13) Evaluation of Slurry for Bikeways. To determine suitability of emulsified asphalt slurry as a surface treatment. R. M. Sanders. HRIS 31-153755 (Citations) COMPLETE

(14) Evaluation of Aggregate Substitution to Improve Wear Characteristics of Bituminous Mixtures. To determine effect of various portions of blended aggregates on frictional resistance and other properties of both dense and open graded surface mixtures. N. L. Smith, E. J. Morawski. HRIS 31-177684 ACTIVE

(15) Evaluation of Latex Modified Concrete Overlays in Bridge Decks. An analysis of the chloride content in concrete cores from bridge decks, taken annually. S. K. Munjal. HRIS 32-153749 ACTIVE

(16) Field Evaluation of WABO-MAURER Modular Bridge Expansion Joint System. To evaluate the difficulties of installation of the system and measure field performance. Lipin. HRIS 33-192789 ACTIVE

(17) Evaluation of a Fusion Bonded Epoxy White Coating on Guardrail. To compare durability and visibility of this coating with standard galvanized rail. G. N. Shah. HRIS 34-177685 ACTIVE

20. MARYLAND (contd)

a. (18) Evaluation of Expoxy Coated Reinforcing Steel in Bridge Decks. Analysis of chloride content in concrete cores taken from bridge decks annually. S. K. Munjal. HRIS 34-153748 ACTIVE

(19) Computer Simulation of Statistical Quality Assurance Testing. Analysis and evaluation of historical data by simulation on the application of statistical specification requirements. A. S. Parrish. HRIS 34-105049 INACTIVE

(20) Evaluation of Combination Insert and Sealant for Concrete Pavement. To evaluate this material under actual field conditions. J. P. Weisner. HRIS 34-105050 ACTIVE

(21) Field Evaluation of Pavement Marking Tape. To evaluate a tape called "Scotchlane." D. Wiles. HRIS 34-153752 FUTURE

(22) Test Procedures for Quality of Base and Subbase Materials. To establish a qualitative scale of standards to distinguish between superior and inferior materials. C.H. Chow, C.A. Byus. HRIS 62-020088 ACTIVE

c. Johns Hopkins University: 601 North Broadway, Baltimore, 21205

(1) Compliance Characteristics of the Human Chest during Cardiopulmonary Resuscitation. To obtain dynamic data on age, weight, sex, stature, axilla chest depth, breadth and circumference for each subject. M. Weisfeldt. HRIS 52-160338 ACTIVE

d. University of Maryland: College Park, 20742

(1) Evaluation of the Adequacy of the State of Maryland Demonstration Bikeway Projects. To determine effectiveness, adequacy of traffic control features and maintenance, and user community opinions. Lautsenheiser. HRIS 12-153750 ACTIVE

(2) Induced Stresses and Fatigue Response of Bridge Elements. To develop the Randomdec method of structural analysis into a system for monitoring damage to steel bridges. J. C. Yang. HRIS 25-177688 ACTIVE

(3) Curved Box Girder Bridges. To develop analysis design production computer program for these bridges, design equations and related tables. Heins. HRIS 25-192793 ACTIVE

(4) Photoelastic Study of Blasting Procedures in Urban Areas. To understand the mechanism of rock breakage with explosives in order to improve blasting procedures for use in an urban environment. J. W. Dally, W.L. Fourney, D. C. Holloway, D. B. Barker. HRIS 33-135085 COMPLETE

(5) Safety and Soundness of Submerged Bridge Timber Piling. To develop a nondestructive means of testing such piling. Derucher. HRIS 34-192798 ACTIVE

(6) A New Sand Drain Consolidation Model. To develop a comprehensive system solution technique for embankment consolidation having vertical sand drain installations. Witczak. HRIS 62-192797 ACTIVE

(7) Modulus Characterization of Maryland State Highway Administration Base Subbase Materials for use in Pavement Design and Rehabilitation. To characterize various base subbase materials being used for input into elastic layer programs. Witczak. HRIS 62-192796 ACTIVE

20. MARYLAND (contd)

e. Asphalt Institute: Asphalt Institute Building, College Park, 20740

(1) Revise Asphalt Institute Manual: Thickness Design - Full-Depth Asphalt Pavement Structures for Highways and Streets. To revise the present manual, with an introduction of a theoretically based structural design procedure. J. F. Shook. HRIS 24-101475 ACTIVE

(2) Colorado Experimental Base Project. A study of structural behavior of asphalt pavements constructed of untreated and asphalt treated bases. G. W. Fritts, J. F. Shook, B. F. Kallas. HRIS 24-082303 (Citations) COMPLETE

(3) Design of Open-Graded Hot-Mixes for Wearing Courses. To evaluate the suitability of current design and develop improvements, or new methods, with an evaluation by field tests. V. P. Puzinauskas, B. F. Kallas. HRIS 31-082301 (Citations) COMPLETE

(4) Rational Materials Characterization. To evaluate equipment and procedures, or develop new ones, for determining elastic and fatigue properties of emulsified asphalt base mixes and asphalt cement treated base mixes using local aggregates. B. F. Kallas, V. P. Puzinauskas. HRIS 31-082302 (Citations) COMPLETE

(5) Study of Paving Mastics, Mixtures and Applications. Evaluation of highly cohesive, mastic-type asphalt mixtures for paving highway, bridge and other surfaces. V. P. Puzinauskas, HRIS 31-103589 (Citations) COMPLETE

(6) Design of Emulsified Asphalt Mixes using the Marshall Apparatus. Studies of the methods for the design of these mixtures using the Marshall test apparatus. V. P. Puzinauskas, R. P. Humer. HRIS 31-192794 ACTIVE

(7) Low-Temperature Properties of Asphalt Concrete Mixtures. To determine the effects of mix composition on mix stiffness and tensile strength, considering such factors as type of aggregate and subgrade and pavement thickness. B. F. Kallas, R. P. Humer. HRIS 31-192795 ACTIVE

g. Jack Faucett Associates: 5454 Wisconsin Avenue, Suite 1150, Chevy Chase, 20015

(1) Modification of the Automobile Sector Forecasting Model. To revise this model to incorporate the latest information on vehicle fuel efficiency technology costs and the phase-in periods associated with such technologies. M. Lawrence. HRIS 13-192786 ACTIVE

(2) Transportation Long-Range Forecast Model. To provide forecasting capability for detailed transportation freight modes to the year 2000, including details for 31 separate commercial and private modes covering all freight and passenger transportation. J. H. Faucett. HRIS 15-153761 (Citations) COMPLETE

(3) Preparation of a Pipeline Transportation Report - Overview. To evaluate Federal and State regulations and other economic and technological factors applicable to planning and operating pipelines, including slurry lines. HRIS 15-160046 ACTIVE

(4) Transportation Energy Conservation Model. To examine the relationships among government policy, vehicle technology and the composition and usage of the stock of transportation vehicles. G. E. Peabody. HRIS 17-177677 (Citations) COMPLETE

i. International Association of Chiefs of Police: 11 Firstfield Road, Gaithersburg, 20760

(1) National Maximum Speed Limit (NMSL) Enforcement Practices and Procedures (Phase III). To prepare a manual describing enforcement practices, including relative productivity and cost effectiveness to be expected from various enforcement configurations. N. Darwick, R. Sostkowski, A. V. Smith, Jr. HRIS 51-192785 ACTIVE

20. MARYLAND (contd)

i (2) National Maximum Speed Limit (NMSL) Enforcement Practices and Procedures (Phase II). To evaluate various enforcement configurations to determine their relative productivity, cost effectiveness and impact on compliance. N. Darwick, R. Sostkowski, A. V. Smith, Jr. HRIS 51-192784 (Citations) COMPLETE

(3) Model Police Traffic Services Policy Document and Model Procedures Manual for Police Services. To develop this document and manual. N. Darwick. HRIS 54- 045530 (Citations) COMPLETE

j. Roy Jorgensen and Associates: 17 Firstfield Road, Gaithersburg, 20760

(1) Construction Management. To develop and field test a system for operational management of construction engineering and inspection. HRIS 33-083649 COMPLETE

(2) Preconstruction and Construction Management. To upgrade the preconstruction and construction related policies, standards and procedures for the Louisiana Department of Transportation and Development during the upcoming years. R. A. Nesslinger. HRIS 33-153734 ACTIVE

l. Materials Research and Development, Woodward-Gardner and Associates, Incorporated: 12150 Parklawn Drive, Rockville, 20852

(1) Alternate Capping Procedures for Concrete 28-Day Quality Assurance Specimens To determine feasibility of using methods other than sulphur mortar caps. Hudson. HRIS 32-153742 ACTIVE

(2) Determination of Statistical Parameters for Highway Construction Continuation II. To study and modify prototype statistical specifications for control of materials, tests and construction procedures. F. J. Bowery, F. T. Higgins, S.B. Hudson. HRIS 33-104596 ACTIVE

m. R.H. Pratt Associates, Incorporated: 10400 Connecticut Avenue, Kensington, 20795

(1) Transportation Control Strategies for the Metropolitan Baltimore Intrastate Air Quality Control Region. To evaluate the effectiveness of transportation control strategies and determine concentration of oxidants in the region. J. Capobianco, M. Scheibe. HRIS 12-135160 (Citations) COMPLETE

p. University of Maryland, Department of Medicine: 29 South Greene Street, Baltimore, 21201

(1) Effects of Sulfuric Acid Aerosol Upon Respiratory Function in Normal Human Subjects. To determine the effects of low concentration sulfuric acid aerosol of small particles on the mechanical factors of breathing in normal human subjects. H. D. Kerr, T. J. Kulle, L. Sauder, J. Young, D.L. Swift. HRIS 52-177687 ACTIVE

v. W. R. Grace and Company: 7379 Route 32, Columbia, 21044

(1) Air Pollution Control - Auto Emission Catalysts. To develop a catalyst system to reduce NO_x CO and hydrocarbons exhaust emissions to meet 1981 standards. J.M. Maselli. HRIS 53-135084 ACTIVE

(2) Calcium Nitrite Admixture to Prevent Corrosion of Steel in Concrete. To develop data on the value of calcium nitrite as a corrosion inhibitor. A. Rosenberg, J. M. Gaidis. HRIS 34-177679 (Citations) ACTIVE

20. MARYLAND (contd)

x. Maryland Medical-Legal Foundation, Incorporated: Baltimore. 21201

(1) Special Field Study - Alcohol Involvement. Special study of both driver fatalities and matched control samples of live drivers involved in motor vehicle accident to determine causal factors. R. S. Fisher, W. C. Masemore. HRIS 51-045532 (Citations) COMPLETE

y. National Asphalt Pavement Association: 6811 Kenilworth Avenue, Riverdale. 20840

(1) Energy Conservation - Mix Recycling (Recycling Asphalt Paving Mixtures to Conserve Asphalt and Aggregate.) Tests of recycling on Nevada highways. HRIS 31-135109 ACTIVE

ad. Booz-Allen and Hamilton, Incorporated: 4330 East-West Highway, Bethesda. 20014

(1) Bus Noise Reduction Technology. Study of programs, technology and equipment to reduce noises from buses. R.L. Hershey, R. Kevala, J. Singh, S. Burns, M. Staiano. HRIS 52-153744 ACTIVE

(2) Legal Review of Specialty Truck Noise Abatement. To study laws and ordinances pertaining to noise from truck mounted trash compactors and refrigeration units and develop a model noise ordinace. R.L. Hershey, R. Kevala, G. Molnar, J. Singh, S. Burns. HRIS 70-153756 COMPLETE

af. Dames and Moore: 7101 Wisconsin Avenue, Suite 700, Bethesda. 20014

(1) Evaluation and Application of Existing Computer Methodology in Geotechniques. Study of existing computer programs required by geotechnical investigations, and select those best suited to fill needs, or which can be modified to do so. S. Saxena, C. Desai. HRIS 63-177676 ACTIVE

ag. Delon Hampton and Associates/SBA: 8701 Georgia Avenue, Silver Spring. 20910

(1) Review of Rapid Transit Tunneling System. A review of the sytem from planning to operation to identify those areas and parameters that need to be analyzed, including design and construction. HRIS 25-160008 ACTIVE

ah. Genasys Corporation: 11300 Rockville Pike. 20852

(1) Traffic Safety Programs Management Information Systems. To develop additional modules to the total system, assistance to TSP personnel in assessing and manipulating the data, identifying and correcting problem areas, etc. HRIS 51-160363 ACTIVE

ai. National Con-Serv., Incorporated: Bethesda. 20014

(1) Vision Tester Validation. To evaluate vision tests as indicators of visual deficiencies which are related to high accident involvement. HRIS 51-160042 ACTIVE

aj. Philco-Ford Corporation: 7979 Old Georgetown Road, Suite 600, Bethesda. 20014

(1) American National Standards Institute 20 Committee. States Model Motorist Data Base. To develop automated data processing procedures in the areas of vehicle registration, ownership, driver licensing, vehicle inspection, safety accident statistics, etc., for use by state motor vehicle administrations. K.D. Hackman Jr. HRIS 90-177675 (Citations) ACTIVE

20. MARYLAND (contd)

ak. Safety Management Institute: 7979 Old Georgetown Road, Suite 600, Bethesda, 20014

(1) Vision Tester Validation. Study of visual performance in relation to safe driving, the potential of the Mark II Integrated Vision Tester as a screening device, and determine alternatives for driver licensing administration. L. B. Hayes. HRIS 52-177690 ACTIVE

al. Maryland Department of Economic and Community Development, 2525 Riva Road, Annapolis, 21401

(1) Continuation of Maryland's Overall Statewide Economic Development Planning Process. Studies of tourism, rail utilization, and the coal industry in Western Maryland and Appalachian Regional development. HRIS 11-179347 (Citations) COMPLETE

21. MASSACHUSETTS

a. Commonwealth of Massachusetts, Executive Office of Transportation and Construction: 1 Ashburnton Place, Room 1610, Boston, 02108

(1) Coordination of Agency Elderly and Handicapped Transportation. To determine value of coordinating social service agency transportation services on a large geographical scale. K. Karash, C. Carlson. HRIS 11-177694 ACTIVE

(2) Highway Operations Management System Implementation. To adapt and implement a management system appropriate for the Public Works Department, through which programs would be selected, planned, organized, directed, controlled and circulated. Keefe. HRIS 11-153774 ACTIVE

(3) Route Evaluation Procedures for Regional Transit Systems. To develop and apply an evaluation technique for existing and proposed routes using cost/rider level of service parametric relationships. K. Karash, H. Morris. HRIS 12-177695 ACTIVE

(4) Intercity Bus Study. Study of the current status of intercity bus industry in the State and what programs the state should institute to aid the industry. C. Carlson. HRIS 12-192817 ACTIVE

(5) Evaluation of Internally Sealed Concrete Bridge Deck. An evaluation of performance of an overlay of internally sealed concrete on a deck subjected to heavy turning movement. Sandonato. HRIS 24-153771 ACTIVE

(6) Surface Characteristics of Pavements. To develop a rating system for predicting need for maintenance or rehabilitation to reduce wet weather accidents, as well as determine effects of seasonal variation upon accidents. Turo. HRIS 24-192816 ACTIVE

(7) Bridge Deck Overlay Replacement. To develop a system for removing and replacing a bituminous overlay without damaging the existing waterproof membrane, and also to design an overlay which is less prone to distortion. Bastanza. HRIS 40-153765 ACTIVE

(8) Evaluation of Bridge Patching Materials. To develop procedures for actual patching work while researching effects of varying proportions of various polymer concrete mixtures. Romano. HRIS 40-192815 ACTIVE

(9) Full Depth Testing of Frost Susceptible Soils. Examination of various soil types under similar environmental and natural freezing conditions to determine relative frost susceptibility. Driscoll. HRIS 64-153773 ACTIVE

21. MASSACHUSETTS (contd)

c. Massachusetts State Department of Public Health: 600 Washington Street, Suite 625, Boston 02133

(1) Services for Traffic Safety. To provide drinking drivers with an opportunity to receive professional help for their problem and reduce potential of accidents. M. Argeriou. HRIS 52-083112 (Citations) ACTIVE

d. Massachusetts Bay Transportation Authority: 50 High Street, Boston, 02110

(1) Validation Study - Bus Operator Testing. To validate a three-test battery for selecting women as bus drivers. C.W. Higgins. HRIS 11-011914 (Citations) ACTIVE

(2) Evaluate the MBTA's Prepaid Transit Pass Program. A study of the current program of providing passes for participating employers and determining if the program should be extended by sales to the general public. E.S. Deeb. HRIS 12-058185 ACTIVE

f. Harvard University: Cambridge, 02138

(1) Methodology and Application of Qualitative Choice Models. Analysis of such problems as introduction of new transit systems, the effects of changes in modes, (staggering of hours of work, and effects of congestion on the highway.) D. Wise, J. Hausman. HRIS 12-179604 ACTIVE

(2) Research on Relationships between Land Use, Transportation and Urban Air Quality. To examine some fundamental relationships in these areas. J. F. Kain, D. Harrison, M. Shapiro. HRIS 15-177699 (Citations) ACTIVE

g. Massachusetts Institute of Technology, Center for Transportation Studies: Cambridge, 02139

(1) Scenarios for Alternative Roles of the Federal Government in Transportation. To evaluate the economic effects of existing and prospective Federal policies governing intercity and international freight and passenger transportation enterprises in the economy. A. F. Friedlaender. HRIS 11-058753 (Citations) ACTIVE

(2) Control Theory in Microeconomics. To develop an econometric model of the automobile industry and examine past effects of government regulation of the transportation industry and predict future effects. HRIS 11-059135 ACTIVE

(3) Area Responses to Transportation System Management (TSM) Requirements. To examine which TSM options are chosen by urban areas, why they are chosen, and how planning is done. R. Gakenheimer, D. Roos. HRIS 11-059918 ACTIVE

(4) Research to Develop Methods for Evaluating TSM Alternatives. To assist in improving capabilities in assessing effects of alternative actions in transportation improvement programs. M. Mannheim. HRIS 11-153786 FUTURE

(5) Urban Transportation Policy Studies. Analysis of land value effects of transit improvements, the transportation Management Program to date, and selected funding issues in urban mass transportation decision making. R. Gakenheimer, A. Altshuler, S. Lerman. HRIS 11-153790 ACTIVE

(6) Development of a Transportation Teaching Computer Package. To develop a computer network model to aid in teaching transportation systems analysis. S. Lerman. HRIS 11-192818 ACTIVE

(7) New Perspectives on Urban Transportation: Strategies for Overcoming Barriers to Innovation. An assessment of potential innovations and their ability to meet energy, environmental and equity goals, the barriers to be overcome and the methods for doing so. A. Altshuler. HRIS 12-058836 ACTIVE

21. MASSACHUSETTS (contd)

g. (8) Advanced Development of Dial-a-Ride Control. To develop computer control algorithms to assure availability of an effective method of assessing likely effects of changes in control techniques in lieu of field testing. HRIS 12-048869 INACTIVE

(9) Choice Theory Model of Urban Transportation Systems. To develop choice theory models of urban residential location decisions, including automobile ownership, mode to work, choice, housing location, etc. S.R. Lerman. HRIS 12-141169 (Citations) COMPLETE

(10) Transportation Planning in Developing Countries. To provide technical assistance to a less developed country in planning, programming and budgeting highway investments. F. Moavenzadeh. HRIS 12-082257 ACTIVE

(11) Integrated Adaptable Metropolitan Service Program. To assist in a demonstration of the dial-a-ride concept and how it can be combined and integrated with a conventional system. D. Roos. HRIS 12-135150 ACTIVE

(12) Study of Port Analysis and Planning. A proposal to undertake a study for the Nigerian Ports Authority in conjunction with a post-graduate education program in planning and developing methodology and techniques. E. Frankel, P. Brown, M. Manheim. HRIS 12-153788 FUTURE

(13) Data Requirements on Intercity Freight Demand Planning. A critical review of present data sources and reporting methods, and evaluation of various methods that might be used to permit more accurate predictions. P.O. Roberts. HRIS 13-058467 (Citations) ACTIVE

(14) Growth and Location within a Metropolitan Economy. To provide a framework for analysis of policies relating to metropolitan areas where there may be national, state, metropolitan or local policy jurisdiction. J. Rothenberg. HRIS 15-110555 COMPLETE

(15) Incremental Costs and Trade-offs between Energy Efficiency and Physical Distribution Effectiveness in the Intercity Freight Market. To develop an analytical model to measure physical distribution costs, transportation performance alternatives and energy use for commodities of various density and values shipped by rail, truck and water. HRIS 15-135132 ACTIVE

(16) Analysis of Freight Markets. To develop a better understanding of important factors in choice of mode for intercity freight movements, analyze existing theories and models, develop new models, and test them. P.O. Roberts. HRIS 16-058837 ACTIVE

(17) Policy Sensitive Freight Model Development. To develop and test disaggregate models of intercity freight demand to be used for analysis of a wide range of policy and program options of the Federal Government. P.O. Roberts. HRIS 16-059960 ACTIVE

(18) Understanding, Prediction and Evaluation of Transportation Related Consumer Behavior. Study of the effect of various policies on residential location and activity patterns of urban households. S. Lerman, M. Ben-Akiva. HRIS 16-192822 ACTIVE

(19) Effect of Electrochemical and Metallurgical Factors on Corrosion of Metals and Alloys. A study of metals and alloys in relation to their resistance to saline solutions and the resulting corrosion effects. H.H. Uhlig. HRIS 34-105033 INACTIVE

(20) Feasibility Study on Automatic Accident Reporting Concepts. A study of current accident reporting technologies and needs for improvement in communications. HRIS 51-058684 INACTIVE

(21) Fabrication and Evaluation of Resonant Non-destructive Tire Tests. HRIS 53-107287 ACTIVE

21 MASSACHUSETTS (contd)

g. (22) Basic Engine Combustion Studies with Methanol Fuel and with Lean Gasoline Mixtures. Basic studies of the effect of methanol fuel and methanol-gasoline blended fuel on spark ignition combustion process. R. J. Tabaczynski. HRIS 53-135122 ACTIVE

(23) Potential Barriers to the Implementation of Advanced Automotive Power Systems. To provide a status report on progress of various options for advanced power systems, determine economic incentives for development and the barriers to implementing technological options. J. B. Heywood HRIS 53-135136 ACTIVE

(24) Advance Research in the Analysis and Control of Freeway Corridor Systems. To develop a mathematical model representative of a generalized freeway corridor and generate strategies for production of traffic patterns utilizing the corridor network in an optimal way. HRIS 54-055564 ACTIVE

(25) Closed-Loop Bus Control Strategies. To review urban traffic models and assess their suitability for studying interactive bus headway control and dispatcher interface. J. E. Ward. HRIS 54-059190 ACTIVE

(26) Reduction of Negative Skin Friction. To develop improved methods for reducing downdrag loads to an economically acceptable level. HRIS 62-192821 ACTIVE

(27) Mechanical Properties of Frozen Soils. To develop behavior principles of frozen soils as part of developing criteria for design of pipeline and building foundations on permafrost. T. Martin, C.C. Ladd. HRIS 64-179591 ACTIVE

h. University of Massachusetts: Amherst, 01002

(1) Roadside Development. To improve erosion control, enhance esthetics, and reduce maintenance costs by refining roadside vegetation establishment techniques. Zak. HRIS 23-192823 ACTIVE

k. ABT Associates, Incorporated: 55 Wheeler Street, Cambridge, 02138

(1) Development of Attitudinal Measurment Techniques for Transportation Planning and Evaluation. To develop and validate a conceptual framework and methodology for utilizing attitudes of transit users to assist in forecasting responses to system innovations. L.C. Kerpelman HRIS 12-153769 (Citations) ACTIVE

(2) Survey of Transportation Needs and Preferences in Four Small Urban Areas in New York. To plan alternative transportation systems for small areas utilizing demand forecasts indicated by age, income and car ownership. N. Ketola, U. Ernst. HRIS 12-135159 ACTIVE

(3) Accessibility of the Metropolitan Washington, D.C., Public Transportation to the Elderly and Handicapped. To identify barriers to travel by these people, develop plans for their elimination and evaluate the effectiveness of the efforts. HRIS 16-045287 ACTIVE

(4) Youth Alcohol Education Material Dissemination and Promotion. To determine the extent and degree of use of alcohol and driving education materials, the obstacles hindering their use and plan to overcome the obstacles. B. Faucette. HRIS 51-058896 (Citations) ACTIVE

(5) Massachusetts Bay Transit Authority Special Needs Study. To estimate numbers and location of the transportation handicapped, and survey existing service providers as well as perform a cost benefit analysis of alternatives. R. Bowlin, U. Ernst. HRIS 90-135153 ACTIVE

21. MASSACHUSETTS (contd)

m. American Science and Engineering, Incorporated: 955 Massachusetts Avenue, Cambridge, 02139

(1) Design and Fabrication of Alcohol Screening Devices. To design and construct such a device and prepare a maintenance manual. HRIS 52-045784 COMPLETE

n. Avco Systems Division: 201 Lowell Street, Wilmington, 01887

(1) Safety Status Data Collection Methodology. To develop evaluation procedures for measuring effectiveness of the Periodic Motor Vehicle Inspection (PMVI) program and of existing State inspection programs. HRIS 53-058777 COMPLETE

(2) Manual Brake Inspection Procedures. A study of manual inspection procedures, techniques and equipment aids to replace dynamic brake testing and subjective inspection procedures. HRIS 53-058782 COMPLETE

(3) Static Brake Inspection Investigation. A study of static inspections without the need to remove wheel assemblies. HRIS 53-055625 COMPLETE

s. Fabric Research Laboratories, Incorporated: Route 128 at US 1, Dedham, 02036

(1) Services to Determine and Characterize Failure Mechanism in Tires. To determine type of tire degradation, initiation and propagation of the failure, the cord/rubber adhesion, etc. HRIS 53-045765 COMPLETE

v. Haley and Aldrich, Incorporated: 238 Main Street, Cambridge, 02142

(1) Muck Utilization in the Urban Transportation Tunneling Process. To assess the problem of disposing of muck from tunnel construction. T.K. Liu. HRIS 63-048898 COMPLETE

y. Arthur D. Little, Incorporated: 25 Acorn Park, Cambridge, 02140

(1) Study of Automobile Market Dynamics. To determine the effects of alternative energy conservation policies on total sales of new cars and distribution by size, class and country of origin. A. S. Morton. HRIS 15-058686 (Citations) ACTIVE

(2) Service Accumulation Heavy Duty Cycle Development. To develop service accumulation cycles for heavy duty trucks, 10,000 pounds GVW and over and obtain over-the-road operating patterns for eight categories of these vehicles. D.A. Hurter, M. Martin, F. G. Willis. HRIS 53-153787 ACTIVE

ab. Massachusetts Health Research Institute, Inc.: 600 Washington Street, Boston, 02111

(1) Alcohol Safety Action Program. To develop and demonstrate the workability of this program intended to reduce accidents and deaths and injuries alcohol-related. E. Gordon. HRIS 52-048539 ACTIVE

ao. Cambridge Systematics, Incorporated: 238 Main Street, Cambridge, 02142

(1) Analysis of Costs and Administrative Support Essential to Implement Transportation Controls under the Clean Air Act. To assess the costs and benefits associated with implementation and administration of controls required under the Act. J.H. Suhrbier, E. A. Deakin. HRIS 11-153762 ACTIVE

(2) Markets: AGT Socio-Economic Research Program Activity. To identify present and futute transportation and socio-economic needs of urban areas. HRIS 11-160451 ACTIVE

21. MASSACHUSETTS (contd)

ao. (3) Feasibility Study of Shared-Ride Auto Transit. To conduct a feasibility study of this concept wherein a licensed individual commuter using his own car is authorized to carry riders for a fee along his route. G.A. Kocur. HRIS 12-153614 (Citations) COMPLETE

(4) Personal Transportation Modes - An Assessment of Use, Choice and Future Preferences. To evaluate the individual preferences towards the automobile and other modes of transport, the factors influencing choices, and the use patterns of the automobile and other modes. L. Sherman. HRIS 12-177691 ACTIVE

(5) Los Angeles Downtown People Mover Planning Study. To refine previously developed models to develop patronage estimates in support of the preliminary engineering phase of the people mover implementation program. E.R. Ruiter. HRIS 12-197295 (Citations) COMPLETE

(6) Downtown People Mover Demand Estimation Manual. To develop a manual for use in planning innovative transportation systems in high activity areas such as central business districts. W.R. Loudon, E.R. Ruiter. HRIS 12-197297 (Citations) COMPLETE

(7) Development of an Enhanced Transportation Planning Methodology. To enhance the capabilities of analyzing transportation control measures using computerized sketch planning procedures, and the program for predicting travel behavior of households, as well as resulting air quality and fuel consumption impacts. E.R. Ruiter. HRIS 13-197296 COMPLETE

(8) Assessment of National Use, Choice and Future Preference toward the Automobile and other Modes of Transportation. To provide an assessment of national choice, use and preferences towards the automobile and other personal modes of transportation. L. Sherman. HRIS 13-197299 (Citations) COMPLETE

(9) Alternative Approaches to the Evaluation of the Impacts of New Rail Rapid Transit Services. To identify and quantify conditions in urban areas which are appropriately attributable to the new rail rapid transit operations. HRIS 15-160448 ACTIVE

(10) Methods for Analyzing Air Quality Transportation Measures. To identify and document sketch planning procedures useful in evaluating impacts on traffic and air quality of transportation control measures. E.E. Ruiter, J.H. Subrbier. HRIS 17-197298 ACTIVE

ap. Charles River Associates, Incorporated: 200 Clarendon Street, Boston, 02110

(1) Development of a Theory of Users' Attitudes Toward Transportation Systems. To develop this theory, quantify these attitudes and propose testable predictions on impacts of innovations on the attitudes. F. Dunbar, R. Dobson. HRIS 11-153768 (Citations) ACTIVE

(2) Preparation of an Evaluation Plan for the Jacksonville, Florida, Transit Fare Prepayment Demonstration. To prepare a detailed evaluation plan for this demonstration. T. Parody, D. Brand. HRIS 12-178055 (Citations) ACTIVE

(3) Preparation of an Evaluation Strategy for Auto-restricted Zones in City Centers. To evaluate the objectives and issues surrounding ARZ projects as well as identify the types of data to be collected and analyzed. D. Brand, B. Winston. HRIS 12-178056 (Citations) ACTIVE

(4) Consultant Assistance to Evaluate the St. Paul Downtown People Mover. To review the assumptions and methodology used in the preliminary engineering study of this people mover. D. Brand, F. Dunbar, R. Newhouser, S. Greene. HRIS 12-192807 ACTIVE

21. MASSACHUSETTS (contd)

ap. (5) Development of a Disaggregate Behavioral Demand Model. To study the variables likely to result in variations in demand for urban transportation services in total or among modes, such as air quality, energy shortage, congestions, land use policy etc. F. Dunbar. (Citations) HRIS 13-058544 ACTIVE

(6) Energy Impact of Federal Capital Grants Program for Transportation. To study the impacts of past and future grants on total freight and passenger travel, mode split within each market and total energy use. W. Tye. HRIS 15-135149 COMPLETE

(7) Evaluation of Transit Service Improvement Demonstrations for the Transit Department. To conduct evaluations of one or more demonstrations of service improvements for the elderly and handicapped. W. B. Tye, J. R. Kuzmyak, B. Winston. HRIS 15-153772 (Citations) ACTIVE

(8) Hedonic Demand Model for Automobiles. To develop and test a methodology that predicts changes in the market for particular makes of automobiles, both foreign and domestic. J. Burrows. HRIS 15-177692 ACTIVE

(9) Impacts of Fuel Efficient Vehicles on the Consumer. To determine impacts of the implementation of corporate average fuel economy regulations, and develop behavioral models of housing location, car ownership and travel. F. C. Dunbar, R. Mellmari. HRIS 15-178053 ACTIVE

(10) Model for Forecasting the Purchase and Use of Electric Automobiles. To forecast purchase and use, focused solely on personal use automobiles. J.H. Boyd. HRIS 15-178054 ACTIVE

(11) Study of Consumer Behavior Towards Fuel Efficient Vehicles. To examine consumer behavior towards such vehicles and analyze and anticipate likely consumer reactions to down-sized vehicles. F. Dunbar. HRIS 15-178057 (Citations) ACTIVE

(12) Guidelines for Prediction of Transit System Impacts for Alternative Analysis. To offer technical guidelines in the preparation of alternatives analyses for high capital transit projects. F. Dunbar, B. Winston. HRIS 15-185243 ACTIVE

(13) Study of the Effects of Fuel Economy Standards on Auto Competition. To examine the effects of NHTSA fuel economy standards on competition in the U.S. Auto industry. J. H. Boyd. HRIS 15-178059 ACTIVE

(14) Methods for Identification of Transportation Alternatives. To generate alternatives responsive to local and national goals, while ensuring that a range of trade-offs among costs and various impact types are considered. R. Kuzmyak. HRIS 15-185244 ACTIVE

(15) Evlauation of Coordinated Transportation Services for the Elderly and Handicapped in Allegheny County, Pennsylvania. To provide an evaluation of the agent broker concept for coordinating elderly and handicapped services in a large city under complex regulatory conditions. B. Edelstin, W. Tye. HRIS 16-192809 ACTIVE

(16) Consumer Representation Plan. To build ongoing relationships between conservation staff and consumers concerned with transportation energy conservation goals. F. Dunbar HRIS 17-192808 ACTIVE

(17) Memphis Auto Restricted Zone Evaluation Planning. To develop and apply a methodology for evaluating the effects of the Memphis ARZ on travel behavior, pedestrian and purchasing behavior, business establishment activity and behavior, transit service productivity. S. Greene, HRIS 54-192810 (Citations) ACTIVE

(18) Boston Auto Restricted Zone Evaluation Planning. To provide a methodology for analyzing the construction impacts of Boston auto restricted sone. D. Brand. B. Winston, S. Greene. HRIS 54-192806 (Citations) COMPLETE

21. MASSACHUSETTS (contd)

as. ECI Systems, Incorporated: 1050 Massachusetts Avenue, Cambridge, 02138

(1) Operational Implications of a Major Model Diversion -- Phase I. To examine the consequences of a major diversion of trips from auto to transit and evaluate the effectiveness of coordinating regional public transportation services. J.H. Batchelder B. C. Kullman. HRIS 12-135154 (Citations) ACTIVE

(2) Low Temperature Alkali Metal-Sulphur Batteries. Research on high energy density secondary batteries with alkali metal anodes and sulphur cathodes. S.B. Brummer, R. D. Rauch. HRIS 34-177693 (Citations) ACTIVE

av. Environmental Research and Technology, Incorporated: 696 Virginia Road, Concord, 01742

(1) Transportation Control Strategies for the Metropolitan Baltimore Intrastate Air Quality Control Region. To evaluate the effectiveness of transportation control strategies and determine concentration of oxidants in the region. J. Capobianco, M. Scheibe. HRIS 12-135160 (Citations) COMPLETE

ba. Thermo Electron Corporation: 101 First Avenue, Waltham, 02154

(1) Bottoming Cycle System for Energy Savings in Long-haul Diesel Trucks. To increase the efficiency of a diesel engine by converting part of the waste exhaust heat to useful power with an organic Rankine bottoming cycle. E. F. Doyle, L. R. DiNanno. HRIS 53-192826 (Citations) ACTIVE

be. Multisystem Incorporated: Cambridge, 02138

(1) Benefit-Cost Analysis for Highway and Related Programs. To install and test a major restructuring of the WISFOT highway programming process, and to instruct staff in its applications. R. D. Jester. HRIS 11-177701 ACTIVE

(2) Service and Methods Demonstration Project. To prepare and implement evaluation plans to assess the impacts of a variety of UMTA service and methods demonstration projects throughout the country. D. M. Alschuler. HRIS 12-177702 (Citations) ACTIVE

bg. GCA Corporation, Technology Division: Burlington Road, Bedford, 01730

(1) Information Documents in Automobile Emissions Inspection and Maintenance Programs. To produce a comprehensive compendium of information on emissions inspection maintenance programs such as cost effectiveness, energy, economics and environmental impacts, etc. B. F. Kincannon, G.L. Deane, A. H. Castaline. HRIS 40-177697 ACTIVE

bh. R. H. Silverman and Associates: 347 North Avenue, Weston, 02193

(1) An Economic Evaluation of Frozen Food Handling in Warehouses, Transportation and Retail Studies. To evaluate the economic advantages and technical efficiencies of improved handling methods, equipment and layouts used. J. L. Runyan. HRIS 15-083514 ACTIVE

bi. H. H. Aerospace Design Company, Incorporated: Civil Air Terminal, Bedford, 01730

(1) Automotive Scrappage and Recycling Industry Study. A literature review an overview of the industry and in-depth studies on aspects of recycling processes and techniques. R. Kaiser. HRIS 34-058473 ACTIVE

21. MASSACHUSETTS (contd)

bj. Argos Associates Incorporated: 12 Glengarry, Winchester, 01890

(1) Technology Assessment of Advanced Composite Materials. To develop a framework for the development and use of advanced composite materials and for assessment of potential long-term socioeconomics and environmental impacts resulted from increased usage of these materials. R. Kaiser. HRIS 34-179346 ACTIVE

22. MICHIGAN

a. Michigan Department of Transportation: P.O. Box 30049, Lansing, 48909

(1) Implementation of Modern Statistical Methods for Improving the Accuracy of Highway Laboratory Data. To develop a manual of procedures and computer programs available for improving the accuracy of sample estimates. L.F. Holbrook, W. H. Kuo. HRIS 11-192838 FUTURE

(2) Pavement Riding Quality. To establish a riding quality inventory of all state trunklines. R.L. Felter. HRIS 24-192839 ACTIVE

(3) Broomed Concrete Pavement Surface. Wet friction and noise characteristics compared for various types of surface texture. F. Copple HRIS 24-101441 (Citations) ACTIVE

(4) Experimental Short Slab Pavements. An evaluation of three experimental pavement sections, with comparisons to the standard jointed reinforced pavement. C. J. Arnold, E. C. Novak, Jr., HRIS 24-083640 (Citations) ACTIVE

(5) Skidding Properties of Pavement Surfaces. A study of methods and equipment for improving measurement of skid resistance. P. Milliman, F. Copple. HRIS 24-101544 ACTIVE

(6) Use of Frost Depth Indicators and Benkelman Beams to Determine when Load Restrictions Should be Lifted. To formalize procedures for applying and lifting weight restrictions and procedures for approving overload requests. E. C. Novak, Jr. HRIS 24-177720 ACTIVE

(7) Performance Evaluation of Trinidad Asphalt Cement for Bituminous Concrete Resurfacing. To assess the relative performance of this cement with conventional asphalt, compare qualities and properties and service under traffic and weather conditions. C.A. Zapata. HRIS 24-135457 (Citations) ACTIVE

(8) Pavement Feedback System for the Michigan Truckline System. To develop a retrievable computerized compilation of historical data and updated information on pavement condition. J. M. Portigo. HRIS 24-135456 ACTIVE

(9) Investigating the Feasibility of Implementing SAMP6 in Michigan Flexible Pavement Design. Determine feasibility of a systems approach using concept of total cost analysis in the design, as well as to test SAMP6 itself. J. M. Portigo. HRIS 24-177721 ACTIVE

(10) Experimental Concrete and Bituminous Shoulders. An experimental installation of several types of outside shoulders. C. J. Arnold. HRIS 24-083639 (Citations) ACTIVE

(11) Comparative Study on Performance of Bituminous Stabilized Bases. To determine if there is any difference in strength of pavements constructed on a black base, or on a standard aggregate base. E. C. Novak, Jr., S.S. Kuo. HRIS 24-177719 (Citations) ACTIVE

(12) Development of Equivalency Factors for Asphalt Treated Bases. To develop such factors between asphalt treated and granular bases, with thickness comparisons made according to conventional layer elastic theory, S.S. Kuo. HRIS 24-101439 ACTIVE

22. MICHIGAN (contd)

a. (13) Steel Sampling on 76 Structures. Removal of samples from beam flanges for determination of yield strength in order to check design computations for full load capacity or posting as appropriate. C. J. Arnold. HRIS 25-177718 (Citations) COMPLETE

(14) Galvanized Steel Reinforced Bridge Decks. Feasibility Study of the use of galvanized reinforcing in bridge decks as a means of controlling corrosion under deicing salts. C. J. Arnold, M. G. Brown. HRIS 25-020146 (Citations) ACTIVE

(15) Static and Dynamic Properties of Anchor Bolts for Signs. To determine effect of static and fatigue strengths of galvanized and ungalvanized bolts and the degree of nut engagement and closeness of fit of several bolt/nut combinations. C. J. Arnold. HRIS 25-192841 ACTIVE

(16) Bridge Girder Butt Welds -- Resistance to Brittle Fracture, Fatigue and Corrosion. To evaluate welds produced by the electroslag and submerged arc processes in two grades of steel used in bridge beam construction. J. D. Culp. HRIS 25-156549 (Citations) ACTIVE

(17) Sulphur in Bituminous Mixtures. To evaluate the feasibility of using sulphur-asphalt mixtures for resurfacing highways. J.H. DeFoe. HRIS 31-177717 (Citations) ACTIVE

(18) Reclaimed Rubber in Asphalt Paving Mixes. Evaluation of the effectiveness of ground reclaimed rubber in mixes for reducing reflective cracking and increasing overlay life. J.H. DeFoe. HRIS 31-177716 ACTIVE

(19) Evaluation of Gussasphalt Surfacing Material. To determine if asphaltic paving mastics can be applied with conventional paving equipment. F. Copple, HRIS 31-103623 (Citations) ACTIVE

(20) Rubberized Asphalt Stress Relieving Membranes. To evaluate the effectiveness of this membrane in preventing or reducing reflection cracking in standard bituminous concrete overlay. R.L. Felter. HRIS 31-192840 ACTIVE

(21) Experimental Econocrete Shoulders. To build and evaluate concrete shoulders of different strengths to compare relative cost and performance. C. J. Arnold, M. G. Brown. HRIS 32-177715 (Citations) ACTIVE

(22) Recycling of Asphalt Pavement. An evaluation of the effectiveness of this recycled material to form a stabilized base course. F. Copple, J.H. DeFoe. HRIS 33-177714 (Citations) ACTIVE

(23) Construction Management. To develop and field test a system for operational management of construction engineering and inspection. HRIS 33-083649 COMPLETE

(24) Evaluation of Promising Proprietary Bridge Deck Expansion Joint Devices. Study of the performance of various approved waterproof expansion dams. F. J. Bashore. HRIS 34-192836 ACTIVE

(25) Evaluating Skew Installations of a Number of Expansion Joint Devices. An evaluation of five basic types of expansion dams at skew angles of 0 to about 60 degrees. F. J. Bashore. HRIS 34-192835 ACTIVE

(26) Effects of Corrosion on Bridges of Unpainted A558 Steel and Unpainted Steel Types. A study of 50 bridges of each type steel as to age, salt usage air pollutants to determine corrosion. J. D. Culp, G.L. Tinklenberg. HRIS 34-192834 ACTIVE

22. MICHIGAN (contd)

a. (27) Development of a Non-proprietary Specification for Inorganic Zinc-rich Coating Systems. To develop a specification for this material based on review of various current specifications in use by states and agencies. G. L. Tinklenberg. HRIS 34-192833 ACTIVE

(28) Epoxy Resin Coated Reinforcing Steel. An evaluation of epoxy coated rebars, as compared with uncoated and galvanized bars. M. G. Brown, C. J. Arnold. HRIS 34-105132 (Citations) ACTIVE

(29) Effectiveness of Neoprene Seals in Preventing Concrete Pavement Construction Joint Deterioration. Annual coring of Neoprene sealed joints to determine extent and rate of deterioration of concrete. F. J. Bashore. HRIS 34-105133 ACTIVE

(30) Study of Water Based Paint Systems for Protective Coatings for State Structures. Laboratory testing of available water-based paints and comparison with currently used oil-based paints. G. L. Tinkelenberg. HRIS 34-192843 ACTIVE

(31) Alternate, More Economical Repainting Systems for Bridge Structural Steel. To compare service life protection with various painting systems, both with single and double coatings. F. J. Bashore. HRIS 34-156540 ACTIVE

(32) Statistical Examination of Accidents Caused by Pre-Icing of Bridges in Michigan. To measure the extent that pre-icing causes accidents, and the identification of weather conditions which allevate the probability of pre-icing. L. F. Holbrook. HRIS 51-192842 ACTIVE

(33) Experimental Project Concerning Joints in Concrete Pavement Repair. To develop data on movement and relative performance of five types of joints for cast-in-place concrete pavement repair in order to choose suitable designs for future repair contracts. C. J. Arnold. HRIS 40-177713 (Citations) ACTIVE

(34) Use of a Low Density Concrete as a Lightweight Fill Material for Bridge Abutments. Evaluation of Elastizell during construction as to density, strength and construction characteristics as it was placed and its durability and effectiveness in preventing vertical movement in the long-term. E. C. Novak, Jr. HRIS 62-177712 (Citations) ACTIVE

(35) Mixed-in-Place Stabilization of Soil with Bituminous Materials. To prepare guidelines and specifications for this work with provision for reclaiming existing materials. J. H. DeFoe. HRIS 62-083642 (Citations) COMPLETE

(36) Evaluation of Sodium Chloride as a Stabilizer for Soil-Aggregate Mixtures. To determine the value of rock salt as a stabilizer for mixtures containing up to 12 percent fines. R. C. Mainfort. HRIS 62-108990 ACTIVE

(37) Soil Support Values and Coefficients of Relative Strength of Michigan Highway Soils. To determine soil modulus values of a variety of local foundation materials and develop a soil support scale for typical materials. E.C. Novak, G.Y. Baladi. HRIS 64-119367 (Citations) ACTIVE

c. Michigan State University: East Lansing, 48824

(1) Commuting Patterns in U.S. Metropolitan Areas. To identify the nature and extent of lateral as compared to centripetal/centrifugal commuting, develop theoretical rationale for observed commuting patterns in terms of population, employment distribution and transportation usage; and examine implications of lateral commuting patterns for smaller developing areas. J. J. Zuiches, P. N. Fulton. HRIS 12-135422 COMPLETE

22. MICHIGAN (contd)

c. (2) Commuting Patterns in the United States, 1970. To determine nature and extent of commuting patterns from 1970 census data; the relationships between patterns population and employment distribution; and implications for future growth. J. J. Zuiches. HRIS 12-138405 (Citations) COMPLETE

(3) Use of Remote Sensing for Land Use Policy Formulation. To demonstrate the operational ability and uses of remote sensing for land use planning and policy formulation. R. D. Vlasin, M. Boylan. HRIS 12-138403 (Citations) ACTIVE

(4) Evaluation of Alternative Rural Freight Transportation Storage and Distribution Systems. To estimate rural freight transportation requirements to 1985 and 1990, and the optimal system. S. R. Thompson. HRIS 15-156542 ACTIVE

(5) More Effective Regional Development of Forest and Recreation Resources in the North Central U.S. To develop a regional land-use model to describe the effects that major changes in population, economic structure, transportation and government institutions would make. D. E. Chappelle. HRIS 15-138401 ACTIVE

(6) Control of Damage and Loss in Distribution. To determine characteristics of commodities and items damaged in distribution, the environment factors causing damage, damage-reduction methods and economics of distribution loss control. J. W. Goff. HRIS 16-083516 (Citations) ACTIVE

(7) The Economics of Rural Road Systems. Describe nature of existing system, estimate demand for rural transportation, and develop methodology to make projections under alternative domestic and foreign demand scenarios to the year 2000. S.R. Thompson. HRIS 16-195923 ACTIVE

(8) Ecological Effects of Highway Construction upon Michigan Woodlots and Wetlands. An investigation of these effects, and develop a computer model to assist in selection of best alternative highway route. C.R. Humphreys. HRIS 17-138402 (Citations) ACTIVE

(9) Small Agricultural Watershed Hydrology. Collection and analysis of rainfall data from three small watersheds and the resulting runoff. F.V. Nurnburger, G. E. Merva, E.H. Kidder, T.L. Loudon. HRIS 22-100886 ACTIVE

(10) Highway Tree Ecology. To establish bare root shade tree stock in the landscape, with a study of pre-plant treatments as to their effect on growth. J. R. Clark HRIS 23-101180 ACTIVE

(11) Sewage Treatment at Freeway Rest Areas. Assessment of effectiveness of land treatment systems for sanitary effluents, a spray system for using waste water on medians, and cost effectiveness of these systems. Erickson. HRIS 23-192844 ACTIVE

(12) Technical and Economic Feasibility of a Solar and Wind Energy Application at a Highway Rest Area. A study of a proposed hybrid solar/wind electrical generating system. H.R. Zapp, J. Asmussen. HRIS 23-192846 (Citations) ACTIVE

(13) Soil Support Values for Michigan Highway Soils. Establish relationships between material characteristics of cohesive soils and the soil support value scale using the repeated load triaxial test. Baladi. HRIS 61-192845 ACTIVE

d. Michigan Technological University: Houghton, 49931

(1) Snow Removal and Ice Control for Ground Transport Channels and Terminals. To identify and evaluate the physical, operational and environmental factors influencing effectiveness of snow removal and ice control operations. E. Y. Huang. HRIS 40-083644 (Citations) ACTIVE

22. MICHIGAN (contd)

d. (2) Physical and Chemical Identification of Diesel Engine Exhaust Particulate Matter. To develop diesel exhaust particulate data on a turbocharged engine, and develop a total hydrocarbon balance in diluted and undiluted exhaust. J. H. Johnson, D. G. Leddy. HRIS 53-156546 COMPLETE

(3) Field Observations of Frost Action. Measurements of soil and air temperatures, and surface heave and analyses to determine their significance in the study of frost action on roads. W. M. Haas. HRIS 64-110348 INACTIVE

e. University of Michigan: Ann Arbor, 48104

(1) Implementation of a Street-Tree Inventory System in Urban Forest Management. To develop a management plan for street trees in Ann Arbor, and evaluate the performance of newly planted trees. J.R. Bassett. HRIS 23-156544 ACTIVE

(2) Strength of Repaired Reinforced Concrete Structural Members. To ascertain the effectiveness of repairs to damaged concrete structural members in restoring original properties. R. D. Hanson. HRIS 32-111514 ACTIVE

(3) Truck Tire Braking and Cornering Traction Study. To test a variety of truck tires on a variety of surfaces for cornering and braking. HRIS 34-160366 ACTIVE

(4) Signal Lighting System Requirements for Emergency, School Bus and Service Vehicles. Analysis of vehicle-to-driver communication requirements for these vehicles so that effective signaling systems can be specified to provide nationwide uniform systems. HRIS 53-160021 ACTIVE

(5) Truck and Trailer Yaw Divergence and Rollover. A study of the effects of frame distortion, fifth wheel location and other factors intrinsic to truck handling, and the best mechanisms by which yaw divergence is precipitated on tractor trailers and means by which yaw stability can be assured up to roll over limit. HRIS 53-160364 ACTIVE

(6) Evaluation of the Feasibility of a Single Beam Headlighting System. An evaluation of the beam pattern parameters needed for developing an optimum single beam system. HRIS 53-160189 ACTIVE

f. Wayne State University, Department of Civil Engineering: Detroit, 48202

(1) Comprehensive Traffic Engineering Study for Oakland County. To evaluate traffic engineering personnel and procedures in accident analysis, develop a system of prioritizing improvements and master plans for improvements. T. Datta, S. Khasnabis, B. Bowman, K. Opiela. HRIS 11-156553 (Citations) ACTIVE

(2) Traffic Engineering Seminars for Elected Officials. To disseminate to elected officials who have to make traffic engineering decisions, some information that will assist them in making decisions. T. K. Datta, B. Bowman. HRIS 11-156575 (Citations) ACTIVE

(3) Modelling of Urban Transportation Systems using UTPS Software Package. To demonstrate the feasibility of using the package for evaluation of transit systems. T. K. Datta, S. Khasnabis, K. Opiela. HRIS 11-156562 (Citations) ACTIVE

(4) The Feasibility of Joint Development at Selected Transit Station Locations in the Detroit Metropolitan Area. To analyze the feasibility of this joint development in conjunction with transit station planning. K. Opiela, S. Khasnabis. HRIS 12-177741 (Citations) COMPLETE

22. MICHIGAN (contd)

f. (5) Development of a Short-term Energy Contingency Plan for Michigan. Analysis of transport needs, the associated energy requirements, the alternatives means to conserve energy and then develop a plan that could be implemented in a short period of time. T. K. Datta, B. Bowman, K. Opiela. HRIS 17-177742 ACTIVE

(6) Comparative Evaluation of Traffic Law Enforcement Practice in Michigan., Ohio and Pennsylvania. A pilot study to determine effect of law enforcement practices in accident experience. S. Khasnabis. HRIS 51-156552 (Citations) COMPLETE

(7) Comparative Analysis of Accident Data: Truck Traffic versus All Other Vehicles in Michigan. A study of accidents to determine if the truck accident experience is statistically different from that of other groups. S. Khasnabis, A. Atabak. HRIS 51-192848 ACTIVE

(8) E. Unit Evaluation. To describe operation of special police units trained and equipped to provide emergency paramedical services when needed (E Units), as well as perform regular duties, determine their impact and if the services could have been provided more cost effectively. K. R. Chelst. HRIS 51-177711 ACTIVE

(9) Development of a Simulation Model for Interfacing Bicycle Movement with Auto Traffic. To test the feasibility of using computer simulation to evaluate alternate traffic control strategies at intersections where bicycle comprise a significant portion of the traffic. S. Khasnabis, K. Opiela. HRIS 54-156555 COMPLETE

g. Bendix Corporation: 20800 Ten and One-Half Mile Road, Southfield, 48076

(1) Collision Avoidance Radar Braking System. Study of the feasibility of the automatic noncooperative radar braking system as an emergency back-up system with various types of passenger car braking systems. HRIS 53-160028 ACTIVE

j. Environmental Research Institute of Michigan: P. O. Box 618, Ann Arbor, 48107

(1) Support of University of Michigan Remote Sensing Symposia. Support of the activities of the center for remote sensing information and analysis. Cook. HRIS 21-156573 ACTIVE

l. General Motors Corporation, Transportation Systems Division: Twelve Mile and Mound Roads, Warren, 48090

(1) Urban Transportation Laboratory. A cooperative program of analyses, experiments and demonstrations of innovative public transit services, equipment and operational methods. K. Armstrong, A. K. Ureinze. HRIS 12-135464 ACTIVE

m. Highway Safety Research Institute, University of Michigan: Huron Parkway and Baxter Road, Ann Arbor, 48105

(1) Stochastic Analysis of Future Vehicle Populations: An Evaluation of Marketing Effects of Alternative Federal Policies. To develop a model to forecast the age/type distributions of future vehicle populations. H. Bunch. HRIS 13-177735 COMPLETE

(2) Bicycle Accident Survey. Review and evaluation of data on bicycle accidents, providing an estimate of future accidents. J. Flora. HRIS 51-156548 COMPLETE

(3) Citizen Participation to Improve Highway Safety. An evaluation of all current means of detecting and locating accidents and stranded motorists. P. L. Olson. HRIS 51-058781 ACTIVE

(4) Design of National Exposure Data System. To develop a practical, cost-feasible system to provide valid exposure data for highway travelers to complement the accident data collected under the National Accident Sampling System. A. Wolfe. HRIS 51-177730 ACTIVE

22. MICHIGAN (contd)

m. (5) Eight Years of Michigan Alcohol-Related Traffic Accident Experience. Analysis of crash data to identify role of alcohol in traffic crashes involving various age groups of drivers, and to identify changes resulting from the 18-year old drinking law. L. D. Filkins. HRIS 51-177708 (Citations) COMPLETE

(6) Fleet Accident Evaluation of FMVSS 121. To determine if frequency of accidents, injuries, fatalities and property damage are different for pre-and post-standard vehicles under known conditions of exposure. K. Campbell. HRIS 51-156558 ACTIVE

(7) Investigation of Selected Vehicle Accidents. To establish the mechanism of trauma in motor vehicle collisions through intensive study of relationship of occupant injuries to vehicle components, crash severity and restraint system effectiveness. D. F. Huelke, H. W. Sherman. HRIS 51-106451 ACTIVE

(8) Highway Incident Data Acquisition and Analysis. To acquire and maintain computerized accident data sets, conduct analyses and make files and computer program available to analysts. J. O'Day. HRIS 51-106267 ACTIVE

(9) Analysis of Industry Response to Federal Regulations on Safety Requirements for New Automobiles. A study of the factors contributing to the acceptance of safety standards and how the industry determined its response. H. Bunch. HRIS 51-156547 COMPLETE

(10) Alcohol, Drugs and Highway Safety: State of Knowledge and Information. To review, evaluate and summarize existing knowledge concerning the problems of alcohol and drugs and highway safety, to assist in determining future research in these areas. K. B. Joscelyn. HRIS 52-135446 COMPLETE

(11) Anthropometry of U.S. Children to Age 18 for Improving Safety of Consumer Product Designs. A nationwide survey of basic and functional measurements, from newborn to age 18, and make the information available to product designers and others needing such information. R. G. Synder, C.L. Ownings, L. W. Schneider, H.M. Reynolds. HRIS 52-135447 COMPLETE

(12) ASAP Baseline Voluntary Survey. To obtain nationwide data for comparison with local ASAP surveys, data obtained in other countries and to learn more about characteristics of persons who drive after consuming too much alcohol. A. Wolfe. HRIS 52-106406 COMPLETE

(13) Biomechanics of Cervical Spine Injuries. A study of the cervical spine, its limitations and resistance to motions, failure characteristics and injury potential in crash environments. J.W. Melvin, D.H. Robbins. HRIS 52-135448 COMPLETE

(14) Development of a Model Alcohol Safety Health/Legal Delivery System. To aid in the overall evaluation of driver and pedestrian program by in-depth examinations of the health/legal adjudicative process at sites where federally-funded programs have been completed under the ASAP program, and comparison with disposition systems of cases in a number of non-funded ASAP sites. K. Joscelyn. HRIS 52-177736 COMPLETE

(15) Drinking Driver Analysis. To update files of alcohol-related crashes to better identify role of alcohol in Michigan highway crashes, particularly among youth. L. Filkins. HRIS 52-177732 ACTIVE

(16) Foundation for Systems Anthropometry. To lay the foundation for a new three-dimensional anthropometry to measure size and shape of the body for both workshop and acceleration/deceleration problems. H.M. Reynolds. HRIS 52-156559 COMPLETE

(17) Human Impact Tolerances in Free Falls. A study of selected free-fall impacts to collect impact-tolerance data useful in design of protective systems for occupants of vehicles involved in collisions. R. G. Snyder. HRIS 52-135452 COMPLETE

22. MICHIGAN (contd)

m. (18) Head Injury Criteria Models. State-of-the-art report on head injury criteria models and recommend best available model for protective helmets for industrial safety. D.H. Robbins. HRIS 52-177734 COMPLETE

(19) Human Tolerance Study. To obtain basic data regarding the response of the human body to dynamic loads, with emphasis on the head and legs. J.W. Melvin HRIS 52-106413 ACTIVE

(20) Drug Research Methodology. To identify potential solutions to methodological problems identified through prior studies of the drug/driving problem. K. B. Joscelyn. HRIS 52-156556 ACTIVE

(21) Identification of General Deterrence Countermeasures for Unsafe Driving Actions. To identify potential enforcement, adjudication, social influence, public information and citizen participation countermeasures aimed at unsafe driving practices. K. Joscelyn. HRIS 52-177731 ACTIVE

(22) Michigan Driver Characteristics File. To obtain a detailed profile of automobile usage and ownership throughout Michigan and develop the capability to monitor changes in the patterns on a continuous basis. R. Kaplan. HRIS 52-135455 COMPLETE

(23) Public Information Programs on Alcohol and Highway Safety. To increase the public understanding of highway safety problems. A. C. Grimm. HRIS 52-106452 ACTIVE

(24) Study of Alcohol-Related Casualties and Alcohol Beverage Market Response to Beverage Alcohol Availability Policies in Michigan. An extension of earlier research on the effects of lower legal drinking age on youth crash involvement. R. Douglass. HRIS 52-156572 COMPLETE

(25) Viscoelasticity of Soft Tissues and Related Injuries. To study theoretically and experimentally the topics of material anisotropy, rapid loading response and failure criteria as they apply to the mechanisms of mechanical trauma in the human body. J. W. Melvin, A.S. Wineman. HRIS 52-135465 COMPLETE

(26) Ad Hoc Study of Certain Safety-Related Characteristics of Double Bottom Tankers. A comparison of stability characteristics of these units with other heavy commercial vehicles. W. D. Ervin. HRIS 53-177710 COMPLETE

(27) Child Restraint Performance. To evaluate the effectiveness of child restraint systems. J. Melvin. HRIS 53-156550 COMPLETE

(28) Data Sources to Support the NHTSA Defects Investigation System. To determine what data would be useful for identifying the existence of a safety-related vehicle defect and how the data can best be utilized. J. O'Day. HRIS 53-177726 COMPLETE

(29) Development and Field Testing of Techniques for Increasing Conspicuity of Motorcycles. To assess results of tests and develop recommendations concerning techniques treatments found to be most effective and feasible in terms of cost and benefits. P. Olson, R. Holstead. HRIS 53-156554 ACTIVE

(30) Fuel Leakage Methodology. To develop a workable methodology for detection and measurement of fuel leakage in motor vehicle collisions. P. Cooley. HRIS 53-177728 COMPLETE

(31) Evaluation of the Effectiveness of FMVSS 301 (Fuel System Integrity, Passenger Cars) Using Fire Department Data. Use of fire and police reports to estimate the frequencies of fuel spillage and of fuel-fed fires in accidents. J. Flora. HRIS 53-177725 ACTIVE

22. MICHIGAN (contd)

m. (32) Improved Passenger Car Braking Performance. To provide information to expand the scope of federal standards to include braking conditions other than straight-line stops on surfaces with a high coefficient of friction. P. Fancher. HRIS 53-156560 COMPLETE

(33) Improvement of Mathematical Models for Simulation of Vehicle Handling. Based on current vehicle dynamic models, develop a method to formulate characteristics that can be related to vehicle directional response. P. Fancher. HRIS 53-177737 ACTIVE

(34) Methodology Development for Measurement and Codification of Occupant Compartment Intrusion. To develop a methodology for the uniform measurement of intrusion into the occupant compartment and the representation of this measurement in a coded form. P. Cooley. HRIS 53-177727 COMPLETE

(35) Michigan Checklane Evaluation. To assess the effectiveness of a random-checklane vehicle inspection program that provides for check of about 15% of vehicle in an area per year, as compared to a periodic inspection of all vehicles. J. D. Flora. HRIS 53-135454 COMPLETE

(36) Motorcycle Dynamics. To determine the adequacy of linearized equations of motion to characterize the dynamic behavior of the motorcycle and determine specification for a motorcycle-tire dynamometer. L. Segal. HRIS 53-156563 COMPLETE

(37) National Crashworthiness Severity Study. Use of previously developed sampling system to aid in the selection of crashes for in-depth investigation in two counties. P. Cooley. HRIS 53-156564 ACTIVE

(38) Occupant Side Impact Simulation Using CVS Program. To develop the existing crash victim simulator program to a more specific and concise model to simulate occupant side impacts. D.H. Robbins. HRIS 53-177729 ACTIVE

(39) Signal Lighting System Requirements for Emergency, School Bus, and Service Vehicles. To analyze vehicle-to-vehicle communication requirements for these vehicles so that effective signalling systems can be specified to provide nationwide uniform systems. D. Post HRIS 53-156568 COMPLETE

(40) Steering Controllability Characteristics. To create a reference base from which design information can be obtained for a possible factory-installed customer option for improved steering characteristics. P. Fancher. HRIS 53-156571 COMPLETE

(41) Truck Braking and Handling. To verify straight-line braking performance of vehicles equipped with anti-lock brakes and develop a computer program for evaluating performance, etc. P. Fancher, R. Ervin, J. Bernand, C. Winkler, C.C. MacAdam. HRIS 53-107410 COMPLETE

(42) Whole Body Kinematic Response to Crashes. To obtain detailed measurements of the responses in a crash environment. J.W. Melvin, J.B. Benson, N. M. Alem. HRIS 53-106656 ACTIVE

(43) Legal Constraints to Countermeasure Development. To identify legal constraints on development and implementation of countermeasures programs designed to deter unsafe driving behavior. K. B. Joscelyn. HRIS 70-156561 ACTIVE

q. American Motors Corporation, Powertrain Engineering Division: Detroit, 48232

(1) Automotive Powertrain and Vehicle Components. To improve thermal efficiency of automotive spark ignition engines. M. W. Stucky. HRIS 53-135418 ACTIVE

22. MICHIGAN (contd)

z. Ford Motor Company: 20000 Rotunda Drive, Dearborn. 48121

(1) Ceramic Regenerator Systems Development Program. To develop ceramic rotary heat exchangers that can be used in automotive gas turbine engines, Stirling engines, truck-industrial turbine engines and other waste heat recovery systems. G. Peitsch. HRIS 34-177707 (Citations) ACTIVE

(2) Brittle Materials Design High Temperature Gas Turbine. To demonstrate successful use of this material in demanding, high temperature, structural applications. A. F. McLean. HRIS 34-135450 (Citations) ACTIVE

(3) Research on Electrodes and Electolyte for the Ford Sodium-Sulphur Battery. To develop information needed to design these batteries and establish the economic viability of them. A. Topousian. HRIS 53-135458 (Citations) INACTIVE

(4) Development of a Sodium-Sulphur Battery. To construct two sodium-sulphur battery systems for automotive transportation applications. A. Topouzian. HRIS 53-135451 (Citations) ACTIVE

(5) Development of Stirling Engine for Potential Automotive Application. To evaluate the potential of this engine for improving fuel economy, and one that can be packaged in a typical US car. C. F. Talbot. HRIS 53-192830 ACTIVE

(6) Methodology for Ceramic Life Prediction and Related Proof Testing. To establish a methodology for predicting life-time reliability of structural ceramic materials for applications such as high-temperature gas turbine engines. A.F. McLean. HRIS 53-177706 ACTIVE

(7) Safety Systems Optimization Model. To develop a computer model to evaluate the safety performance of any proposed automobile design and determine vehicle design parameter values which maximize safety achievable for defined cost/benefit trade offs. S.E. Benson. HRIS 53-156565 COMPLETE

ab. Washentaw Council on Alcoholism: 2301 Platt Road, Ann Arbor. 48104

(1) Services for Problem Drinkers. To improve techniques and expertise in identifying and treating early stage problem drinkers. B.K. Kistner. HRIS 51-135442 ACTIVE

ac. Vector Research Incorporated, Box 1506, Ann Arbor. 48106

(1) Preliminary Certification Resource Assessment. To analyze EPA motor vehicle emission certification procedures and policies to identify alternatives which appear to increase efficient utilization of EPA resources. T. C. Doyle, R.G. Anderson, W. D. Kinley, W. E. Judnick, R. L. Farrell. HRIS 55-156546 ACTIVE

ad. Michigan State Department of Education, Box 420, Lansing. 48902

(1) Traffic Safety Education Evaluation. To evaluate the effectiveness of different types of educational programs. R. E. Claflin. HRIS 51-177709 ACTIVE

ae. Energy Development Association: 110 Whitcomb Avenue, Royal Oak. 48071

(1) Zinc Chlorine Electrical Rechargeable Storage System. Study of the practical use of this system. J.W. Rowan, P.C. Symons, P. Carr. HRIS 53-192829 ACTIVE

af. Michigan Department of State Police: 7150 Harris Drive, Lansing. 48913

(1) Fatal Accident Reporting System (FARS). Participation in the National Highway Traffic Safety Administration's program to develop and utilize the FARS. P. W. Haseltine. HRIS 51-192832 (Citations) ACTIVE

23. MINNESOTA

a. Minnesota Department of Transportation: 408 Transportation Building, St. Paul, 55155

(1) Vegetation and Erosion Control for Highway Slopes and Ditches. An evaluation of erosion control materials, their effectiveness and ecological relationships, including fertilization experiments for roadside vegetation. L. E. Foote. HRIS 23-020038 ACTIVE

(2) Roadside Evaluation of New Ground Cover Materials. A study of such variables as location, direction of exposure and soil conditions on some 35 woody plants. L. M. Murphy. HRIS 23-156596 ACTIVE

(3) Evaluation of New Turfgrass Selections for Roadside Use. To test selected grass clones to determine their adaptability to harsh roadside environmental conditions. D. C. White. HRIS 23-082291 ACTIVE

(4) Pilot Program for Evaluation of the Structural Adequacy of Flexible Pavement for Counties and Municipalities. To develop procedures for estimating time until those pavements will need repairs or overlays. E.O. Lukanen, R.C. Ingberg, G. R. Korfhage. HRIS 24-135478 ACTIVE

(5) Full Depth Asphalt Pavement Structures Evaluation. To determine the appropriate granular equivalent for full-depth asphalt base. L. O. Lukanen, G.R. Korfhage. HRIS 24-101479 (Citations) ACTIVE

(6) Evaluation of the Road Rater Model 2000 Modified. Tests of various pavement surfaces, base course and subbase to determine best combination for each structure under various load magnitudes and frequencies. E.O. Lukanen, R.C. Olson. HRIS 24-192853 ACTIVE

(7) Developing Repair Methods for Continuously Reinforced Concrete Pavement. Try and evaluate various methods, including scarification of upper one-half inch, low slump concrete overlay, cathodic protection, and complete removal and replacement. (R.G. Tracy, G. R. Korfhage.) HRIS 24-192850 ACTIVE

(8) Designs and Evaluation of Roadway Widening Sections Through Swamps. Experimental construction where an inplace roadway floating over a peat swamp is to be widened using fiberglass and wood chips. E.O. Lukanen, G.R. Korfhage. HRIS 24-135473 (Citations) ACTIVE

(9) Application of AASHO Road Test Results to Design of Flexible Pavements. Laboratory and field tests on in-service highways to determine the applicability of the Road Test equations to Minnesota conditions. P.J. Diethelm, L.O. Lukanen. HRIS 24-021097 (Citations) ACTIVE

(10) Application of Statistical Concepts to Quality Assurance. To determine statistical parameters for density of bituminous wearing courses, granular base courses and embankments as well as gradation of granular base courses. G.R. Korfhage, R. O. Wolters. HRIS 24-105129 (Citations) COMPLETE

(11) Bridge Deck Deterioration and Restoration. Evaluation of a number of materials to be used as waterproofing. G.R. Korfhage, R.G. Tracy. HRIS 25-102968 (Citations) ACTIVE

(12) Methods and Materials for Reducing Crack Reflectance. The use of rubber asphalt seal coat, rubber asphalt interlayers, Petromat, carbon black and sulphur asphalt in experimental bituminous overlay projects to reduce reflective cracking. R.C. Olson, R. H. Cassellius. HRIS 31-192855 ACTIVE

(13) Evaluation of Recycled Bituminous Pavements. Study of methods and procedures for recycling these pavements with the salvaged gravel base materials heated to a high temperature before being remixed with the bituminous material. R.M. Morchinek, R. H. Cassellius. HRIS 31-156592 ACTIVE

23. MINNESOTA (contd)

a. (14) Crack Reflectance on Bituminous Overlaid PCC Pavement. Testing of various methods of overlaying pcc pavements that would prevent or reduce reflection of joints through the overlay. R. C. Olson, R.H. Cassellius. HRIS 31-156589 ACTIVE

(15) Evaluation of Shrinkage Compensating Cement. To determine the effectiveness of such cement together with certain additives to reduce severity and frequency of the shrinkage. P.J. Diethelm, H.J. Gillis. HRIS 32-104169 (Citations) COMPLETE

(16) Pavement Marking Materials. The use of a variety of marking materials on high traffic volume roads in the Twin City area, and using a device to measure the reflectivity of the markings while traveling at high speeds, as well as daylight visibility. G. R. Korfhage, H. J. Gillis. HRIS 34-104742 (Citations) ACTIVE

(17) Hot and Cold Joint Sealing Materials. An investigation of various sealers, such as hot poured rubber asphalt, and cold applied polymer types. P.J. Diethelm, R. M. Morchinek. HRIS 34-104743 (Citations) ACTIVE

(18) Degradation of Crushed Rock and Gravel Base Material. An evaluation of the degradation of crushed rock, principally limestone. G.R. Korfhage, R.H. Cassellius. HRIS 35-105369 ACTIVE

(19) Sawing Joints to Control Cracking in Flexible Pavements. Study of the effects of sawing joints at 40, 60 and 100 foot intervals on the development of transverse cracks. R. M. Morchinek, R. C. Ingberg. HRIS 40-082289 (Citations) ACTIVE

(20) Treatment of Centerline Culverts in Plastic Soils. Study of four types of granular centerline culvert treatments, in silt and clay embankment soils as well as granular soils. HRIS 64-177746 ACTIVE

b. Minnesota Department of Public Safety, Office of Traffic Safety: 207 Transportation Building, St. Paul, 55155

(1) Minnesota Motorcycle Study. To determine effect of the repeal of the mandatory helmet law in terms of fatalities and serious injuries. B.W. Webber. HRIS 51-177743 (Citations) ACTIVE

(2) Minnesota Alcohol and Traffic Safety Program. An assessment of the drinking driver problem, including statistical data on arrests, fatalities, laws and court decisions, countermeasures and recommended law changes. B.W. Webber. HRIS 51-177744 (Citations) COMPLETE

(3) Fatality Accident File (Fatal Accident Reporting System). To establish a research-oriented file of fatalities in support of the highway safety (accident) countermeasures program. HRIS 51-038841 ACTIVE

(4) Alcohol Safety Action Project. To complement and evaluate a comprehensive countermeasures program designed to reduce role of alcohol as a contributing factor in highway crashes. HRIS 51-045052 ACTIVE

d. University of Minnesota: Minneapolis, 55455

(1) Social and Economic Consequences of Energy Development in the Northern Great Plains. To analyze effects of alternative forms of coal development and uses on employment, income, population, community service needs and revenues. L. Bender. HRIS 15-083524 (Citations) ACTIVE

(2) Evaluation of New Roadside Ground Cover Materials. To determine utility of some thirty-five woody plants for erosion control. A.G. Johnson. HRIS 23-082290 ACTIVE

23. MINNESOTA (contd)

d. (3) Synthesis of Optimal Control Strategies for Large Scale Urban Transportation Networks. To develop a system methodology for urban traffic control in a signalized street network. P.G. Michalopoulos, G. Stephanopoulus
HRIS 55-179600 ACTIVE

e. University of Minnesota, Agricultural Experiment Station: St. Paul. 55108

(1) Evaluation of Alternative Rural Freight Transportation, Storage and Distribution Systems. To estimate the rural freight transportation requirements to 1985 and 1990, and the optimal rural freight transportation, storage and distribution system, and the economic effects of alternative governmental policies. R.P. Dahl.
HRIS 11-156591 (Citations) ACTIVE

24. MISSISSIPPI

a. Mississippi State Highway Department: P.O. Box 1850, Jackson. 39205

(1) Scour Around Bridge Piers. To validate scour prediction formulas and evaluate performance of a scour-monitoring system built into a bridge pier. T.C. Teng.
HRIS 22-177754 ACTIVE

(2) Experimental Construction of Cement-treated Emulsified Asphalt Plant Mix Base Course. To construct and evaluate this base course. T.C. Teng.
HRIS 24-156580 (Citations) COMPLETE

(3) Pavement Rehabilitation Using Dynaflect Data. To investigate the feasibility of using the Dynaflect data in the rehabilitation program. T. C. Teng. HRIS 24-101461 ACTIVE

(4) Pavement Design System for Mississippi Highways. An evaluation of design procedures used by other States and recommend those design approaches that seem best suited for use in Mississippi. J. D. Webb, T.C.P. Teng. HRIS 24-156584 ACTIVE

(5) Prestressed Concrete Pavement. To demonstrate the practicability and economic competitiveness if this type of pavement construction. T.C.P. Teng.
HRIS 24-156583 ACTIVE

(6) Evaluation of Low-Temperature Bituminous Plant Mixes. To determine the extent to which mixing temperatures can be reduced without detrimental effects on pavement performance, and to identify characteristics to be retained when temperatures are reduced. J.D. Webb. HRIS 31-177753 ACTIVE

(7) An Evaluation of Joint Sealing Tapes. Evaluation of these tapes under field construction and contract conditions. J.D. Webb. HRIS 34-192863 ACTIVE

(8) An Evaluation of Encapsulated Lens Reflective Sheeting Signs. An evaluation of this material as to service life and economics. S.Q. Kidd, F. Kyle. HRIS 34-082275 ACTIVE

(9) Skid Resistance and Wear Properties of Aggregates for Asphalt Paving Mixtures. To predetermine the polishing properties of aggregates as they affect value of skid resistance and develop test equipment for this predetermination, and for life expectancy. S.Q. Kidd. HRIS 35-103612 ACTIVE

(10) An Evaluation of Rural Lighting, Desoto County. To evaluate a luminaire system as related to pavement illumination, brightness, uniformity, glare, cost and maintenance. J.D. Webb. HRIS 51-106428 COMPLETE

(11) An Evaluation of Road Marking Materials. An evaluation of paints, thermoplastics, raised markers and epoxy paints for marking pavements. T.C. Teng, J.H. Davis, Lanz, B.F. Wallace. HRIS 54-021500 (Citations) ACTIVE

24. MISSISSIPPI (contd)

a. (12) Study of Active Clays as Related to Highway Design. To improve design techniques whenever expansive clays are encountered in the subgrade. T.C.P. Teng HRIS 64-192859 ACTIVE

d. University of Mississippi: University, 38677

(1) Criteria for Emulsified Asphalt Stabilization of Sandy Soils. To develop criteria for routine design asphalt treated base course, including testing techniques. K. P. George, R.L. Henry. HRIS 31-082274 (Citations) COMPLETE

g. Mississippi State University: State College, 39762

(1) Analysis of State-wide Integrated Transportation System. Analysis of transportation in the state, the population and its relation to transport modes, views of users and nonusers, commodity flow, and planning processes. HRIS 11-058351 ACTIVE

25. MISSOURI

a. Missouri State Highway Department: State Highway Building, Jefferson City, 65101

(1) Study of Skid Resistant PCC Pavements Surfaces. To determine friction characteristics of surfaces constructed with one-half, three-fourth and one inch tine spaced wire combs. HRIS 24-192870 ACTIVE

(2) Missouri Satellite Highway Test Section Study. To modify the criteria developed by the AASHO Road, test and make them applicable to pavement design in Missouri. Deruess. HRIS 24-101559 ACTIVE

(3) Investigation of Roadway Design Variables to Reduce D-Cracking. To evaluate the effects of reduced aggregate size, type of base, and use of moisture barrier on the occurance of D-cracking. Hunter. HRIS 24-156605 ACTIVE

(4) Investigation of Bridge Deck Protective Systems. To determine effectiveness of cathodic protection, low-slump concrete, latex modified concrete and membrane systems on retardation of corrosion. HRIS 34-156608 ACTIVE

(5) An Investigation of the Engineering Properties of Three Problem Earth Materials. A general background study of performance and engineering properties of gley, claystones and shales. Hunter. HRIS 61-192868 FUTURE

(6) Evaluation of the Point Load Test for Rock. To evaluate the relationship of the point load strenght to the unconfined compressive strength of rock. HRIS 61-192869 FUTURE

c. University of Missouri: Columbia, 65201

(1) Evaluation of Alternative Transportation Systems and Policies for Rural Missouri. To estimate transportation requirements to 1985 and 1990, economic effects of alternative rural transport systems, assess state and federal roles on policy planning and regulation of transport systems. D.E. Moser, R. Rudel. HRIS 11-138364 (Citations) ACTIVE

(2) Evaluation of Alternative Rural Freight Transportation Storage and Distribution Systems. Estimation of requirements to 1985 and 1990, the optimal systems, and evaluate economic effects of alternative government policies. D.E. Moser, R. Rudel. HRIS 15-156604 ACTIVE

(3) Behavior of Untensioned-Bonded Prestressing Strand. To evaluate the effects of cyclic loading on positive moment connection using this strand. Salmons. HRIS 25-156600 ACTIVE

(4) Computer Aided Design. Development of techniques and software, data bases and remote services for computer-aided design systems. R. T. Douty. HRIS 25-102846 ACTIVE

(5) Relation of Toughness Test Values to Fatigue Cracking on Bridges. To determine relative effectiveness of several tests to determine susceptiblity to fatigue cracking and observe crack growth rates in a full scale bridge. Baldwin. HRIS 25-177765 ACTIVE

25. MISSOURI (contd)

c. (6) A Portable Self-monitoring Instrument for Load History Studies. To develop an economical method for gathering stress history data on existing bridges under service conditions. J.W. Baldwin, Jr. HRIS 25-102982 (Citations) ACTIVE

(7) Loss of Bolt Tension in Steel Bridges. To determine causes of structural steel bolts to lose tension under service conditions. J.W. Baldwin, Jr. HRIS 25-192871 (Citations) COMPLETE

(8) An Investigation on the Behavior of a Three-span Composite Highway Bridge (Phase II). Determine fatigue life at a high stress range, comparing results with AASHTO specifications, evaluate crack detection methods, determine if bridge properties are significantly altered by accumulative damage. J. Baldwin, H. J. Salane, R. P. McBean, T.V. Galambos, R.C. Duffield HRIS 25-020147 (Citations) ACTIVE

d. University of Missouri: Rolla, 65401

(1) Use of Alcohol as Vehicle Fuel Components. To develop information on properties of alcohols as components of automotive fuel, including economy, emissions, and blending ratios. R.T. Johnson. HRIS 17-058362 ACTIVE

(2) Thermal Stresses Induced in a Composite Model Bridge Structure. To substantiate a theoretical study by using a 30-foot two-span laboratory model. J.H. Emanuel. HRIS 25-156615 ACTIVE

(3) Webs for Flexural Member. Studies of the structural behavior of webs of cold-formed steel sections under various types of stresses. W. Yu. HRIS 25-102979 ACTIVE

(4) Investigation of the Effects of Weak Floor Conditions on the Stability of Coal Pillars. A study of the stability of mine excavations as related to response of pillar and roof to loss of floor support. R.W. Stephenson, J.D. Rockaway. HRIS 63-156609 (Citations) ACTIVE

f. Automobile Club of Missouri: 201 Progress Parkway, Maryland Heights, 63043

(1) Post-Repair Inspection Service. To compare the repair quality and costs in Missouri with those in California. L. Pipes. HRIS 53-178062 COMPLETE

(2) Safety and Emissions Inspections of Crash-Involved Vehicles. Examination of 1968 to 1977 vehicles for damage to safety and exhaust emission systems as well as for compliance before collision with established standards. J.N. Noettl, L.A. Pipes. HRIS 53-178063 COMPLETE

(3) Customer Service Management Study. To determine practices in the management of warranty related customer service as related to first owners of vehicles under 20,000 miles. L.A. Pipes. HRIS 70-178060 COMPLETE

k. Missouri Department of Natural Resources, Division of Geology and Land Survey: P.O. Box 250, Rolla, 65401

(1) Factors in Subsidence and Catastrophic Collapse in Karst Terrain. To define geologic features of Karst Terrain that are indicative of catastrophic failure of the land surface. J. H. Williams, J. D. Vineyard. HRIS 61-135543 (Citations) COMPLETE

l. Community Alcohol Program of Kansas City, Inc.: 3600 Broadway, Kansas City, 64111

(1) Services for Drinking Drivers. To support the Alcohol Safety Action Program and plan and develop a concept for comprehensive community alcoholism services. D. J. Mnookin. HRIS 51-135540 (Citations) ACTIVE

n. Missouri Department of Public Safety: 400-7th Street, Jefferson City, 65101

(1) Fatality Analysis File. To establish research-oriented file of data from fatal motor vehicle crashes. HRIS 51-055792 ACTIVE

26. MONTANA

a. Montana Department of Highways: 6th Avenue and Roberts, Helena, 59601

(1) Predicting Moisture Induced Damage to Asphaltic Concrete - Field Evaluation Phase. To evaluate a section of 1975 pavement in accordance with NCHRP Project 4-8(3)-1, predicting moisture induced damage. Bruce. HRIS 24-156618 ACTIVE

d. Montana State University: Bozeman, 59717

(1) Population Growth, Land Use and Resident Satisfaction. To assess attitudes of Bozeman residents on growth, land use controls, community satisfaction. P. C. Jobes. HRIS 15-135548 ACTIVE

d. (2) Social and Economic Consequences of Energy Development in the Northern Great Plains. To analyze effects of alternative forms of coal development and users on employment, income, population, community service needs and revenues. L. Bender. HRIS 15-083524 (Citations) ACTIVE

(3) Effect of Transportation Rates, Facilities and Institutions upon Grain Marketing Systems in Montana. To determine present railroad and truck rate structure for moving grain within and out of the state, determine changes in railroad loading over the past 40 years as compared with production, and analyze movements from farm to elevators by rail and by truck. R. J. McConnen. HRIS 16-111506 ACTIVE

(4) Forest Engineering Systems for Steep Mountain Forestry. To identify and evaluate alternative engineering systems that can improve efficiency and environmental acceptability of forest resource utilization. R.B. Gardner. HRIS 17-135547 (Citations) ACTIVE

(5) Procedures and Materials for Roadside Development in Montana. To develop dry-land planting innovations for roadside stabilization, as well as species mixtures and planting procedures for rapid erosion control. R.L. Hodder, I.B. Jensen HRIS 23-101048 (Citations) COMPLETE

(6) High Performance Liquid Chromotography Analysis as a Method of Measuring Asphalt Composition. To establish a workable procedure for this analysis that can be conveniently used with existing quality control tests. Jennings. HRIS 31-192875 ACTIVE

(7) Chemical Composition and Aggregate Bonding Affinites of Commercial Asphalt Cements. To determine the difference in chemical composition of asphaltic binders which were satisfactory for pavement construction in the past, the binders in current use and if such differences are significant for explaining the less satisfactory performance of current asphalts. Jennings. HRIS 31-156616 (Citations) COMPLETE

27. NEBRASKA

a. Nebraska Department of Roads: P.O. Box 94759, Highway Building, Lincoln, 68509

(1) Flexible Pavement Performance Evaluation Using Deflection Criteria. To use these criteria for measuring structural adequacy of pavement for a sufficiency rating system. Wedner. HRIS 24-102104 ACTIVE

(2) Seasonal Loss in Serviceability of Pavements. To determine the relationship between deterioration rate and thickness, strength and axle load application. R. Wedner. HRIS 24-135552 ACTIVE

(3) Corrosion Study of Bridge Decks. A service comparison of bridge decks resurfaced with latex concrete or high-density low-slump concrete, with consideration of the costs of the process, as well as the maintenance costs for service life. J. Anderson. HRIS 25-177766 ACTIVE

(4) Repair of Portland Cement Concrete Pavement Joints. Determine scope of the problem of damage to the joints, develop repair methods, including time and cost relations. J. Anderson. HRIS 40-156621 ACTIVE

(5) Implementation and Operation of Fatality Accident Reporting System (FARS). To provide input to the National FARS program and meet Nebraska needs for information on alcohol involvement in accidents. J. Hile. HRIS 51-038189 ACTIVE

27. NEBRASKA (contd)

b. University of Nebraska: Lincoln, 68503

(1) Evaluation of Alternative Rural Freight Transportation, Storage and Distribution Systems. To evaluate the economic effects of alternative governmental policies on shippers, carriers, receivers and rural communities. D. G. Anderson. HRIS 15-156620 (Citations) ACTIVE

(2) Systems Analysis of the Economics of Grain Marketing. To investigate the operations of marketing systems as they effect the economics of physical distribution and processing of grains. M. Turner, P.W. Lytle. HRIS 15-083527 (Citations) ACTIVE

(3) Impact of Changing Transportation Systems on Local Grain and Farm Supply Firms. To estimate quantities of grain that will move through country elevators and evaluate alternative modes of transportation. D. G. Anderson. HRIS 15-083526 (Citations) ACTIVE

(4) Structural Design of Flexible Pavement. To check the Nebraska thickness design procedure by evaluation of the relationships between PSI, SN, soils, situation, rainfall and loading. A.R. Kennedy. HRIS 24-101552 (Citations) ACTIVE

28. NEVADA

c. University of Nevada: Reno, 89507

(1) Soil Interpretations and Socio-Economic Criteria for Land Use Planning. Determination of physical and socio-economic causes and consequences of encroachment by urban activities upon rural lands, identification and interpretation of soil-behavior and soil-landscape data needed. F. F. Peterson. HRIS 12-110821 ACTIVE

(2) Economic Effects of Land Use on the Private Rural and Urban Fringe Land Market. To determine what rural land use controls are utilized by government agencies and develop a model or procedure for analyzing effectiveness of land use planning with respect to desired objectives and with respect to agricultural land. R. L. Shane. HRIS 15-177769 ACTIVE

(3) Impact of Rural Subdivision on Rural Land Value and Rural Communities. To identify and estimate impacts of various type community developments on land values. J. G. McNeely, Jr. HRIS 15-177768 ACTIVE

(4) Artificial Revegetation of Depleted Sites in the Big Sagebrush Type with Native Species. To determine feasibility of, and methods to establish desirable native shrubs, grass and brush species on such sites, without needing any mechanical preparation of the areas. F. Peterson, R.E. Eckert, Jr. HRIS 23-177770 COMPLETE

(5) Remote Sensing Applications for the Analysis and Management of Renewable Natural Resources. To investigate this technique for application to such resources as range forestry, wildlife, watershed, outdoor recreation and crop agriculture. P. T. Tueller. HRIS 23-177771 ACTIVE

(6) Drought Resistance in Tree and Shrub Seedlings: National Variability, Measurement and Preconditioning. To determine this variability, using techniques to measure internal plant water stress, and determine feasibility of preconditioning. E. L. Miller, J.B. Budy. HRIS 23-177772 COMPLETE

(7) Organic Water Quality and Suspended Sediments from Small Forested Watersheds. To determine natural watershed effects on water quality, effects of logging, grazing and recreational useage, and define predictive techniques. C.M. Skau, J.C. Brown. HRIS 23-177773 ACTIVE

28. NEVADA (contd)

c. (8) Climatic and Phonological Models for Resource Planning and Management. Develop techniques to forecast long-term events from short term records, as well as to expand limited site data to larger areas. R.O. Gifford. HRIS 23-177774 ACTIVE

(9) Utilizing Native Vegetation to Enhance Man's Environment. To determine suitability of native plants for landscaping, develop propagation techniques, study disease relationships. W.S. Johnson, G.D. Robinson, R.L. Post. HRIS 23-177775 ACTIVE

(10) Nondestructive Dynamic Testing of Three Highway Bridges. Full-scale dynamic testing of bridges representative of the typical structures, with both lateral and vertical directions of testing. B.M. Douglas. HRIS 25-192882 ACTIVE

(11) Particulate Inventory for the Non-Aqua Portion of the State. To identify and analyze existing and potential sources of particulate matter which emit pollutants in the ambient air. L.H. Shifley, Jr. HRIS 11-177776 COMPLETE

(12) Reconnaissance Soil Survey Identification and Evaluation of Alternative Uses of Nevada Soils. Investigation of bio-physical and socio-economic land related resource data needed for land use policy making and planning. F. F. Peterson. HRIS 61-177767 ACTIVE

d. Hodges Transportation, Incorporated: P. O. Box 234, Carson City

(1) Treadwear Validation. To validate that tire tread wear can be predicted from data obtained from a test run of less than 50 miles. H. C. Hodges, J. A. Schleick. HRIS 53-156623 ACTIVE

f. LMC Corporation: 476 Dunn Circle, Sparks, 89431

(1) Evaluation of Flywheel Drive Technology for a Commuter Vehicle. To develop a flywheel powerplant to be used in a commuter vehicle powered only by energy stored in the flywheel. D. Widlermuth. HRIS 53-192879 ACTIVE

29. NEW HAMPSHIRE

a. New Hampshire Department of Public Works and Highways, Highway Safety Agency: John O. Morton, Office Building, 85 London Road, Concord, 03301

(1) Implementation and Operation of the Fatality Analysis File. To establish a research-oriented file of fatalities in support of the Alcohol Countermeasures Program. HRIS 51-106479 ACTIVE

c. Dartmouth College, Thayer School of Engineering: Hanover, 03755

(1) Techniques for Analyzing the Productivity and Efficiency of Rural Transit Systems. To determine how such systems can be designed so as to be maximally effective in providing service. T.J. Adler, R. Stearns. HRIS 12-192887 (Citations) ACTIVE

(2) Interactions between National Energy Supply and Transportation Related Energy Consumption. To analyse the long-term effects on transportation use and consumption of energy, including changes in price, availability and policies. T. J. Adler. HRIS 17-192886 ACTIVE

d. University of New Hampshire: Durham, 03824

(1) Experimental Slope Seeding for Erosion Control. To evaluate the effectiveness of several grass species for such use. Kiang. HRIS 23-082315 ACTIVE

29. NEW HAMPSHIRE (contd)

d. (2) Controlling the Water Cement Ratio of Portland Cement Concrete While Maintaining Workability. To determine if separating aggregates into different size fractions prior to batching would result in higher quality concrete. Gress. HRIS 32-192885 ACTIVE

e. New Hampshire Department of Health and Welfare: Concord, 03301

(1) Services for Drinking Drivers. A study of services provided to correct the drinking driver problem. M.H. Mires. HRIS 52-135560 COMPLETE

30. NEW JERSEY

a. New Jersey Department of Transportation: 1035 Parkway Avenue, P.O. Box 101, Trenton, 08625

(1) Determination of Hot and Cold Start Percentages for New Jersey. To determine the average percentages of vehicles of given types in each type of start among the total number of vehicles on the various function classifications of roadways during specified time periods. T. A. Fuca, K. Brodtman. HRIS 17-177780 (Citations) ACTIVE

(2) NEEP Project #17 - Evaluation of Breakway Cable Terminal (BCT). To evaluate the in-service performance of BCT installations. K.C. Afferton, R. F. Baker. HRIS 21-156636 ACTIVE

(3) Evaluation of Traffic Noise Barrier Design Methods. To develop a method for evaluation of current design methods utilizing before and after noise measurements at the construction sites. T.A. Fuca. HRIS 21-156632 (Citations) ACTIVE

(4) Evaluation of Delineation Reflectors and Mountings on New Jersey Concrete Median Barriers. An evaluation of a delineation system for durability and implemented features. A.W. Roberts. HRIS 21-177784 ACTIVE

(5) Center Barrier Visibility. Analysis of various reflective materials and mounting systems and dynamic and static tests to determine best system for a center barrier installation. R.L. Hollinger, A.W. Roberts, W.L. Mullowney HRIS 21-177782 ACTIVE

(6) Roadside Vegetation -- Implementation of Fine Fescue Grasses. To establish and evaluate an experimental fescue developed by Rutgers University especially for New Jersey roadsides. R.F. Baker. HRIS 23-177795 (Citations) ACTIVE

(7) Statistical Specifications Development. A study of the problems with converting standard specifications to statistically-based and end-result specifications. R.M. Weed. HRIS 24-177796 FUTURE

(8) Skid Resistance Study. To produce the means by which the number and severity of traffic accidents and injuries attributable to slippery pavements may be reduced. J. Quinn, B. Margerum. HRIS 24-177790 (Citations) ACTIVE

(9) Second Generation Overlays. To develop methodology for overlaying previously overlaid pavement without sacrificing overhead clearance or introduction of undesireable cross slope or drainage problems. J. Quinn. HRIS 24-177789 ACTIVE

(10) Performance of an Experimental Contraction Jointed Pavement Design. To evaluate the design and determine capability of end anchor systems used. R. R. Santoro. HRIS 24-156637 (Citations) ACTIVE

(11) Pavement Roughness Evaluations Using a Mays Ride Meter. To develop procedures for operating the New Jersey model of the Mays ride meter and determine the degree of improvement in rideability of new pavements. J.R. Croteau. HRIS 24-177787 (Citations) ACTIVE

30. NEW JERSEY (contd)

a. (12) Improved Drainage and Frost Action Criteria for New Jersey Pavement Design. To improve design process in the area of subsurface drainage and frost action. K.C. Afferton, G.S. Kozlov. HRIS 24-177786 ACTIVE

(13) Experimental Pavement Project. To determine relative performance of various base course materials in flexible pavement construction and compare with those used in the AASHO Road Test. R.F. Baker. HRIS 24-177794 (Citations) ACTIVE

(14) Bituminous Concrete Pavement Distress -- Longitudinal Cracking. To ascertain if the distress is related to adoption of viscosity graded asphalt cements and if so, develop specification changes to negate or alleviate this distress. E. J. Hellreigel. J. Quinn. HRIS 24-177791 ACTIVE

(15) Experimental Cost-Effective Reconstruction of Bridge Decks. To determine if a chloride contaminated bridge deck can be restored to a serviceable condition in accordance with manual for cost-effective reconstruction. D. Ray. HRIS 25-177792 ACTIVE

(16) Bridge Deck Protective Systems. To apply and evaluate several types of protective systems, to either prevent corrosive material from reaching the steel or to make the steel immune to corrosion. Gwynn. HRIS 25-192890 ACTIVE

(17) Study to Improve Quality of Hot Bituminous Type Winter Pothole Patching Material. To develop methods, procedures and equipment for improving this material. J. J. Quinn. HRIS 31-156640 (Citations) COMPLETE

(18) Evaluation of Bituminous Mix Produced by the Drum-Dryer Process. To determine the advisability of using this process in New Jersey, and if so, develop specifications. J. R. Croteau. HRIS 31-156629 ACTIVE

(19) Anti-scaling Agents for Concrete Surfaces. Field and laboratory evaluation of various anti-scaling agents. Croteau. HRIS 34-192888 ACTIVE

(20) Atmospheric Corrosion Tests of Unpainted Low-alloy Steels for Use in Construction of Highway Bridges. Determine the corrosion performance of Mayari-50 steel as compared with plain carbon steel in industrial and highway atmospheres. G. S. Kozlov. HRIS 34-156626 (Citations) ACTIVE

(21) Methodology for Permanent Patching of Bridge Decks. To develop the required methodology for patching bridge decks, based on review of presently used methods, and then prepare a standard method. B. Margerum. J. Quinn. HRIS 40-177781 ACTIVE

(22) Bridge Deck Patching. An investigation of bridge deck patching materials and methods in order to establish standards and specifications. Margerum HRIS 34-192889 ACTIVE

(23) Transit Crime Study. To determine countermeasures against crimes, vandalism and disturbances relating to passengers on bus and rail lines. C.R. Graf. A.W. Roberts. HRIS 51-177797 (Citations) COMPLETE

(24) Breakaway Sign Testing. To improve the performance of the New Jersey breakaway sign. J.C. Powers. HRIS 51-156627 (Citations) ACTIVE

(25) Determination of Truck Noise Levels for New Jersey. To more accurately predict noise levels using computer programs with respect to classifying trucks. S.R. Sasor. HRIS 53-177793 (Citations) ACTIVE

(26) Operational Effects of Right-Turn-On-Red. To examine effect of RTOR on accident experience and delay to motorists and pedestrians. Warren. HRIS 54-192895 ACTIVE

30. NEW JERSEY (contd)

a. (27) Evaluation of Control Strategies and Demonstration of Bus Preemption of Traffic Signals. To provide a bus preemption system at signalized intersection that will minimize total passenger hours of delays. I. Dommasch. HRIS 54-156630 ACTIVE

(28) Construction Zone Safety and Delineation. To determine nature and causes of traffic problems on state-maintained highways during construction and maintenance operations where longer lane closures and diversions are required. A.W. Roberts. HRIS 54-177783 ACTIVE

(29) Design Warrants for Left-Turning Vehicles at Signalized Intersections. To develop usable and practicable methods for determining type of provision required for left-turning vehicles. Reilly. HRIS 54-192891 ACTIVE

(30) Effect of Raised Markers on Traffic Performance. To determine effects of snow-plowable raised pavement markers on traffic safety and efficiency and driver visibility at night and in the rain. Reilly. HRIS 54-192892 ACTIVE

b. Princeton University: Princeton, 08540

(1) Analysis of Urban Travel Demand. The use of behavioral models of trip scheduling to analyze effects of bus and/or carpool priority measures on freeways. K. A. Small. HRIS 12-177798 ACTIVE

(2) Allocation of Transit Subsidies. To develop an analytical methodology for rational allocation of subsidies to different transit lines and modes. P.M. Lion. HRIS 14-059896 COMPLETE

(3) Response Analysis of Long-Span Bridges under Wind Loading. Study of response of suspended bridge decks to wind loading in wind tunnels and comparison to theoretical calculations. R.H. Scanlan. HRIS 25-177799 ACTIVE

c. Rutgers University: New Brunswick, 08903

(1) Evaluation of Turfgrasses. Evaluations on both new and standard turfgrasses for utilization on highway roadsides and other applications. C.R. Funk HRIS 23-101116 (Citations) ACTIVE

(2) Implementation and Extension of Fine Grasses for Roadsides. Comparison of a new fine grass mixture with the present standard and synthesize a new spreading fescue. Duell. HRIS 23-156634 ACTIVE

(3) Influence of Chemical Stabilization of Base Course Materials on Tensile Strength Study of the effects of chemical stabilization on shrinkage, beam action, etc. causing pavement failures. G.R. Glenn. HRIS 24-101458 INACTIVE

(4) Personal and Family Adjustment to Urban Noise. A study of the reactions of people to noise due to highway construction as measured by before and after interviews. N.D. Weinstein. HRIS 55-156638 ACTIVE

(5) Direct Shear Response of Wetting of a Dessicated Kalinitic Clay. To measure the shearing responses of this clay as ample water is supplied, in an adopted direct shear apparatus. G.R. Glenn. HRIS 62-135583 (Citations) COMPLETE

(6) Stabilizing Soils for Engineering Purposes by Use of Chemical Additives. To find more rapid means for the engineering stabilization of soils. G.R. Glenn. HRIS 64-110350 INACTIVE

30. NEW JERSEY (contd)

g. Exxon Research and Engineering Company: P.O. Box 51, Linden, 07036

(1) Petroleum - Conversion: Environmental. Research and development on petroleum combustion from the point of view of environmental conservation, with stress on emission detection and atmospheric reactions. N. Alpert. HRIS 17-135580 INACTIVE

(2) The Characterization of Particulate Emissions from Prototype Catalyst Vehicles. To measure and characterize the exhaust particulate from a variety of catalyst systems used in emissions control. M. Beltzer, R.J. Campion. HRIS 53-135566 COMPLETE

(3) Investigation and Assessment of Light Duty Vehicle Evaporative Emission Sources and Control. To evaluate the evaporative control systems on 1973-1975 cars, and then to modify the systems to provide better control. H.P. Shannon, P.J. Clarke, B. J. Kraus. HRIS 53-135573 COMPLETE

n. Aerochem Research Laboratories, Incorporated: P.O. Box 12, Princeton, 08540

(1) Mobile Source NO_x Measurements via an H-Atom Direct Chemiluminescence Method. To establish experimentally the feasibility of a NO_x H monitor which can operate interference-free in mobile source exhausts. A. Fontijn. HRIS 53-177778 ACTIVE

q. New Jersey Office of Highway Safety: 4 Scotch Road, Trenton, 08625

(1) Fatal Accident Reporting System (FARS). To participate in the National FARS program. D. Billingsley. HRIS 51-177788 ACTIVE

r. Port Authority of New York and New Jersey: One Path Plaza, Jersey City, 07306

(1) Accelerating Walkway System Demonstration Program. Development of the concept, feasibility studies, design development, testing and demonstrations. J.J. Fruin. HRIS 12-195742 (Citations) ACTIVE

s. Plastics Technology Associates, Incorporated: P.O. Box 863, Brick Town, 08723

(1) Composite Materials Comprising Reaction-Injection-Molding Combinations of Carbon Fibers and Thermosetting Resins. To establish feasibility of utilizing polyurethanes and polyepoxides for manufacturing with the RIM system in combination with fibers, etc. F. Hostettler. HRIS 34-179345 ACTIVE

31. NEW MEXICO

c. University of New Mexico: Albuquerque, 87131

(1) Survey of Fatal Rollover Crash Sites and Comparison Sites. To obtain such detailed information on these sites as gradient, curvature, superelevation, fixed object placement, as well as similar measurements one mile upstream from the site. J. W. Hall. HRIS 21-192904 ACTIVE

(2) Nondestructive Evaluation of Airfield Pavements. The use of a nondestructive vibratory technique to evaluate load-carrying capacity of pavements. J.P. Nielson. HRIS 24-102036 (Citations) ACTIVE

(3) Fatigue Characteristics of USAF Concrete Pavements. To develop techniques and criteria for predicting fatigue life of asphaltic concrete pavements. J.P. Nielsen, D.S. Decker. HRIS 24-192903 ACTIVE

31. NEW MEXICO (contd)

c. (4) Development of Criteria for Use of Asphalt-Rubber Mixtures in the Design. Construction and Maintenance of Airfield Pavements. Determine potential use of asphalt-rubber in the maintenance and upgrading of pavements. J.B. Nielsen. D.S. Decker. HRIS 31-192902 ACTIVE

(5) Influence of Road Salting on the Nutrient and Heavy Metal Levels in Stream Water. A study of the use of road salt to maintain ice-free roads, and the effects of such use on streams, vegetation, and land management. J.R. Gosz. HRIS 40-156643 COMPLETE

(6) Traffic Engineering Improvement Priorities for Energy Conservation. To incorporate fuel conservation attributes of low-cost traffic engineering improvements into the decision making process. J.W. Hall. HRIS 54-192905 ACTIVE

(7) Design and Construction of Pavements in Expansive Soils (Evaluation of Swell Characteristics of Airfield Pavement Subgrades.) Soil studies to determine procedures for designing pavements. R.G. McKeen. HRIS 62-177801 (Citations) ACTIVE

e. New Mexico State University: Las Cruces. 88003

(1) Soil Interpretations and Socio-Economic Criteria for Land Use Planning. Determine physical and socio-economic causes and consequences of encroachment by urban activities on rural lands, evaluate adequacy of present land use planning, and develop alternative procedures. L. Daugherty. HRIS 12-110818 COMPLETE

(2) Pavement Design Optimization. Develop a computerized design program for pavements based on present design method used by the State. K.R. White J. Minor. HRIS 24-177803 COMPLETE

(3) Impact of Energy Related Developments on Highway Design and Maintenance in North-western New Mexico. To determine the impact of energy developments in the uranium and coal fields in the area on transporation systems. K. White. J. Minor. HRIS 24-156642 COMPLETE

(4) Effect of Overload Vehicles on Pavements: Feasibility Study. To develop a computer program to analyze the effect of a specific vehicle on a pavement, including wheel configuration and number of axles required to carry a specific load. J. Minor. K. R. White. HRIS 24-135588 COMPLETE

(5) Computer Aided Design of Bridge Abutments. To update design methods with the use of computer methods to analyze alternate designs. J. Minor. K.R. White. HRIS 25-156641 INACTIVE

(6) Rear Impact Protection Studies. Conduct tests with dummies and human surrogates to study protection methods for front seat passengers from rear impact collisions. A.S. Hu. HRIS 53-177805 COMPLETE

(7) Response of Dummies and Cadavers to Side and Rear Impact. To compare the kinetics in side impacts. A.S. Hu. R.M. Zimmerman. HRIS 53-059886 (Citations) COMPLETE

(8) School Bus Occupant Retrofit Protective Materials. A survey of padding for application to school bus seats, restraining panels: and test equipment with and without padding. R. M. Zimmerman. HRIS 53-177806 COMPLETE

(9) Feasibility Study for Possible Energy Savings in Soil Compaction Techniques. Comparison of soil compaction curves for typical, soils at different energy levels and moisture contents, correlating field compaction with laboratory tests. K. R. White, J. Minor. HRIS 62-192901 ACTIVE

31. NEW MEXICO (contd)

g. Sandia Laboratories: P. O. Box 5800, Albuquerque, 87115

(1) Emergency Planning and Response Evaluation. Develop plans and procedures for responding to potential accidents at nuclear fuel cycle facilities or in radioactive material transport systems. J. Sprung. HRIS 51-179582 ACTIVE

(2) Full Scale Vehicle Testing Program. To conduct full-scale accident tests to determine the integrity of shipping casks for transport of nuclear wastes. H. R. Yoshimura. HRIS 51-135599 ACTIVE

(3) Liquid Metal Fast Breeding Reactor Spent Fuel Shipping Technology. To develop technology, equipment and methods for safe shipment of this spent fuel. R. M. Jefferson, J. M. Freeman. HRIS 51-193283 ACTIVE

(4) Maintenance of a Transportation Accident Environmental Data Bank. To develop and maintain this data bank and respond to questions of official users wishing to obtain environmental data. J.T. Foley, C.A. Davidson. HRIS 51-135596 (Citations) ACTIVE

(5) Physical Parameters of Transportation Accidents. To assess the probability of occurence and severity of five major transportation accident environmental categories (impact, fire, puncture, crush and immersion) that may be experienced by casks or containers in air, highway, rail and water transportation. J.D. McClure, J. T. Foley, C.A. Davidson. HRIS 51-135594 ACTIVE

(6) Preliminary Analysis of Safety Assessment in Transporting Radioactive Materials in the Commercial Sector. To examine the technical basis for analyzing safety in transport with the objective of providing program definitional assistance to the NRC activities. R. Luna HRIS 51-235595 ACTIVE

i. New Mexico Department of Motor Vehicles, Traffic Safety Division: Santa Fe, 87503

(1) Vehicle Survey and Inspection. Study other state inspection programs and recommend a system for New Mexico, as well as sample citizens' opinions on desires and needs for inspection of vehicles. L. Adcock. HRIS 51-177800 ACTIVE

32. NEW YORK

a. New York State Department of Transportation: State Campus, Albany, 12232

(1) Trade-off Analysis: Applications to Transportation Policy Planning. The use of this analysis in the study of various transportation policy programs. D.T. Hartgen. HRIS 11-157605 (Citations) ACTIVE

(2) Carpool Coordinator Demonstration Project. To demonstrate whether transportation energy can be significantly reduced through the use of employer-based carpool coordinators to substantially increase carpooling. J.M. Brunso, D.T. Hartgen. HRIS 12-192918 (Citations) ACTIVE

(3) Distance-Based Transit Fares: Revenue, Ridership, Equity. To determine the equity and revenue implications of distance based fares. D.T. Hartgen, W. R. Ugolik. HRIS 12-177828 (Citations) ACTIVE

(4) Effects of Alternate Service and Fare Levels on Rural Transit Systems. To develop a computer simulation of a proposed demand-responsive (door-to-door) rural transportation system, sensitive to employment centers, population and business activity, but not to involve road networks. W.R. Ugolik, R.G. Knighton. HRIS 12-192922 (Citations) ACTIVE

32. NEW YORK (contd)

a. (5)	Factors Affecting Transit Productivity. To determine key factors influencing transit productivity and cost and how these factors have varied over time. R. King, N.S. Erlbaum. HRIS 12-157603 (Citations)	ACTIVE
(6)	Freight Demand and Economic Regulatory Policy Implication. To develop multi-modal models of freight demand that are sensitive to transportation policy changes. D.T. Hartgen, D.I. Gooding, G.S. Cohen. HRIS 12-192928	ACTIVE
(7)	The Influence of Attitudes and Perceptions in Mode Choice. To investigate the travel decision choice process incorporating traveler attitudes and perceptions towards modal attributes and such situational factors as auto availability and income. D. T. Hartgen, S. M. Howe, G.S. Cohen, A.J. Neveu. HRIS 12-192930 (Citations)	ACTIVE
(8)	Intercity Passenger Travel Models: Development and Applications. To develop these models to forecast changes in rail ridership in the New York City-Buffalo Corridor. D.T. Hartgen, N. S. Erlbaum, G.S. Cohen. HRIS 12-157604 (Citations)	COMPLETE
(9)	Marginal Weighting of Survey Data. Study of the problems in applying marginal weighting techniques to sample surveys. S. Howe, K. Kloeber, L.T. Olman, G.S. Cohen. HRIS 12-192934 (Citations)	COMPLETE
(10)	Staggered Work Hours and Alternative Work Schedules. To determine feasible work schedules of staggered hours and 4-day work weeks and the impact on operational efficiency of a highway network in a high-density employment area. A. A. Tannir, D.T. Hartgen. HRIS 12-192937 (Citations)	ACTIVE
(11)	Transit Ridership and Planning Methods. Studies of transit fares, the impact of time-of-day fares, subsidies, increases and decreases, and the equity of fares charged. D.T. Hartgen, G.S. Cohen, D.L. Weiss. HRIS 12-192941	ACTIVE
(12)	Travel Patterns of the Elderly and Handicapped. To determine transit traveling needs of these two groups and the factors affecting them, obstacles to travel, and economic costs. D.T. Hartgen, D.L. Weiss. HRIS 12-157607 (Citations)	ACTIVE
(13)	Transportation Planning for the 1980 Winter Olympics. To develop a transportation system in Lake Placid for the Games, with tentative planning based on shuttle buses. G. Cohen, R. Albertin, R. Knighton, P. Wolf, M. Vecchio. HRIS 12-157606 (Citations)	ACTIVE
(14)	Disaggregate Travel Demand Model Applications. To address the practical problems of implementing disaggregate models for forecasting travel. D.T. Hartgen, G. S. Cohen, S. Howe, P. Liou. HRIS 13-192919 (Citations)	ACTIVE
(15)	Transportation Energy Analysis for New York State. A comprehensive study of transportation energy to support development of state Energy Conservation Plan. D. Hartgen. HRIS 15-177834 (Citations)	ACTIVE
(16)	Transportation Elements of the New York State Energy Conservation Plan. To assist the New York State Energy Office in implementing, revising, and refining transportation elements of the State Plan, by investigating such matters, as right turn-on-red, enforcement of the 55 mph speed limit, carpool coordination assistance, etc. J. M. Gross, D.T. Hartgen, M.A. Kocis, A.J. Neveu, P. Koeppel, D. K. Boyle. HRIS 17-192942 (Citations)	ACTIVE
(17)	Forecasting Air Quality in Upper New York State. To identify all areas of the State not in compliance with the 1977 amendments to the Clean Air Act. D.T. Hartgen, G. S. Cohen, R. J. Zabinski. HRIS 17-192927 (Citations)	COMPLETE

32. NEW YORK (contd)

a. (18) Evaluation and Testing of Highway Barriers and Other Safety Accessories. To develop improvements in guardrails and median barriers, small sign supports, detector poles, etc. J. Allison. HRIS 21-100731 (Citations) COMPLETE

(19) Improvement of Safety Facilities. To determine the impact performance of various safety structures and work zone barricades through full-scale crash tests. K.C. Hahn. R. G. Phillips, J. E. Bryden. HRIS 21-192929 ACTIVE

(20) Performance of Safety Devices. To determine if newly installed safety devices such as guide rail, median barriers, impact attenuators, breakaway sign supports, and frangible base lamp posts are performing as expected. J.R. Allison, R.D. Carlson. HRIS 21-106393 COMPLETE

(21) Performance of New Highway Barriers. Determine field performance of a new barrier and determine costs of repairs after a collision. J.E. Bryden. HRIS 21-106631 COMPLETE

(22) Safety Effectiveness of Transverse Grooving. To determine this grooving's effectiveness in increasing skid resistance. G.F. Gurney. HRIS 24-135656 ACTIVE

(23) Pavement Deflections and Foundation Conditions. To define changes in pavement performance and structural conditions in terms of foundation conditions, particularly moisture. L. Hartvigas. HRIS 24-135651 INACTIVE

(24) Ice-Retardant Overlays. To evaluate proprietary asphalt concrete additive designed to retard icing. R.J. Nittinger. HRIS 24-177830 ACTIVE

(25) Flexible Pavement Base Course Study. To compare performance of asphaltic concrete pavements having various thicknesses and types of base course items. J.M. Vyce. L. Hartvigas, J.E. Noonan. HRIS 24-101557 (Citations) ACTIVE

(26) Experimental Concrete Pavements. To evaluate the effects of selected features incorporated in new concrete pavements. L. Hartvigas. HRIS 24-101955 (Citations) ACTIVE

(27) Evaluation of Open-graded Asphalt Friction Courses. An evaluation of the 7-year performance of existing open-graded friction courses placed over both asphaltic and portland cement concrete pavements. Dodge. HRIS 24-192924 ACTIVE

(28) Durability of Tine Textures on Portland Cement Concrete. To evaluate the skid resistance and surface texture of pcc pavements constructed with transverse tine texturing. W. G. Leslie. HRIS 24-192921 ACTIVE

(29) Development of Skid Resistant Bituminous Surfaces. A study of the relationship between aggregate size and skid resistance of bituminous surfaces. R.W. Miller. HRIS 24-111543 (Citations) ACTIVE

(30) Color and Texture Contrast for Shoulders and Medians. To evaluate the effectiveness, durability and skid resistance of surface treatments, synthetic binder concrete, paint and thermoplastic contrast treatments for such applications. R.A. Lorini. HRIS 24-135634 ACTIVE

(31) Bituminous Resurfacings on Rigid Pavements. To increase the life of bituminous resurfacings, with reduction and retardation of reflection cracks. J.M. Vyce, J. E. Noenau. HRIS 24-103616 (Citations) ACTIVE

(32) Cessation Requirements for Bituminous Paving. To establish rational cessation requirements and develop guidelines as when such paving is feasible in various sections of the state. R.J. Ringer, F. Pezze. HRIS 24-101472 ACTIVE

32. NEW YORK (contd)

a. (33) Field Testing as an Aid to Load Rating Bridges. Phase I. To develop low cost field tests for evaluating load capacity and to generalize findings for certain classes of structures to permit assigning load rating with little or no physical testing. B. J. Kissane. HRIS 25-192926 ACTIVE

(34) Load Capacity of Concrete Bridge Decks. To obtain values for induced bending moments in slabs subjected to multiple wheel loads. R.J. McDermott. HRIS 25-192931 ACTIVE

(35) Load Rating of Concrete Bridge Decks. To prepare a design office procedure for assessing effect of single and tandem wheel loads. HRIS 25- 192932 ACTIVE

(36) Performance of Monolithic Bridge Decks. To develop data to enable prediction of maintenance needs for bridge decks with respect to the requirement for one and one-half to two inches of concrete cover over the rebars, and the three and one-fourth inches of cover on earlier designs. W.G. Leslie. HRIS 25-135653 (Citations) ACTIVE

(37) Bituminous Pavement Construction: New Methods. To evaluate such innovations as vibratory rolling, thick lift courses, and recycling. R.J. Nittinger. HRIS 33-104618 (Citations) ACTIVE

(38) Vibration of Pavement Concrete. To study procedures for, and interactions between, vibration and selected materials as they affect finished pavements. R.G. Phillips, J. C. Montgomery. HRIS 33-104617 COMPLETE

(39) Survey of Coated and Paved Corrugated Steel Pipe. To gather data on effectiveness of coating and paving on culverts. J. P. Ewing. HRIS 34-192938 ACTIVE

(40) Acceptance Sampling and Testing of Construction Materials. To develop statistically based acceptance tests for reinforcing bars, structural paints and neoprene joint sealers. D.A. Law. HRIS 34-104619 (Citations) ACTIVE

(41) Resealing Rigid Pavement Joints. To identify joint sealers that will be reasonable in cost, easy to install and provide longer service that those now in use. L. Hartvigas, J. C. Montgomery. HRIS 34-105067 (Citations) ACTIVE

(42) Construction and Sealing Transverse Joints. Laboratory tests on preformed neoprene joint sealers, and comparison with field service life to determine if service life can be predicted by laboratory testing. J.E. Bryden, R.A. Lorini HRIS 34-104600 (Citations) ACTIVE

(43) Durability of Metal Culverts. To evaluate the durability of galvanized corrugated steel pipe and corrugated aluminum pipe. J. Ewing. HRIS 34-104984 (Citations) ACTIVE

(44) Evaluation of Longlife Pavement Markings. To demonstrate the year-round delineation provided by long-life marking materials as compared with traffic paints. G. F. Gurney. HRIS 34-192923 ACTIVE

(45) Evaluation of Snowplowable Pavement Markers. To determine casting and reflector durability of the Stimsonite Model 96 marker when plowed by tungsten-carbide plow blades, as well as damage to the plow blade. P.K. Gupta, G.F. Gurney. HRIS 34-177829 ACTIVE

(46) Polymer Coatings for Corrugated Steel Pipe. Tests of two polymer coatings as alternatives for asphalt for coating pipe. R.M. Pyskadio. HRIS 34-192935 ACTIVE

(47) Pore Characteristics of Coarse Aggregate. Study of pore size and pore size distribution of these aggregates and relation to suitability of the aggregate for highway purposes. W.P. Chamberlin. HRIS 34-105130 ACTIVE

(48) Maintenance of Reflective Signs. To determine need for such maintenance activities as washing and clear coating, as well as determine service life of reflective sign material. E.D. McNaught, G.F. Gurney. HRIS 40-135648 ACTIVE

32. NEW YORK (contd)

a. (49) Traffic Safety during Moving Maintenance Operations. To develop effective traffic protection schemes and test warning devices that can be used in painting stripes and other slow moving maintenance operations. A.A. Tannir. HRIS 40-192940 ACTIVE

(50) Snowfall Accumulation Toleration Limit. To determine most economical toleration limit for each highway class by analyzing user and maintenance costs associated with various snow accumulations. McDonald. HRIS 40-192936 ACTIVE

(51) Snow Accumulation Toleration Limit. To determine effect of snow accumulation on traffic volumes and speeds of various levels of maintenance activities. R.D. Carlson. HRIS 40-177832 ACTIVE

(52) Pavement Patching. To find improved materials and methods for patching, considering performance, cost and ease of installation. J.M. Vyce, L. Hartvigas. HRIS 40-101471 ACTIVE

(53) Operating Speeds of Snow-and-Ice Control Vehicles. To determine the significance of drivers, routes, traffic, storm conditions and time of day on operations. W. C. Burnett. HRIS 40-177831 ACTIVE

(54) Evaluation of Adirondack Park Traffic Signs. To compare performance of traffic signs using yellow legends on brown background to standard signs using white legends on green or blue background. G.F. Gurney. HRIS 54-156656 COMPLETE

(55) Statewide Survey of Sign Legibility. To determine if improved legibility is needed as determined by sign brightness and legibility distance. E.D. McNaught, K. C. Hahn. HRIS 54-106394 COMPLETE

(56) Traffic Control during Moving Maintenance Operations. To develop and evaluate control schemes during such operations to insure traffic safety within the zone of operation. J.E. Brydon. HRIS 54-156686 ACTIVE

(57) Traffic Detection Evaluation. Comparison of accuracy, reliability and cost of a new traffic sensor with the currency used induction loop detectors. D.A. Law. HRIS 54-177833 ACTIVE

(58) Effects of Illuminated Signs on Traffic Performance. To determine if sign lighting will improve traffic performance at a problem location. E. McNaught, K.C. Hahn. HRIS 54-107943 COMPLETE

(59) County Engineering Soil Surveys. An inventory to prepare engineering soil survey reports for individual counties, excluding urban areas. HRIS 61-108922 (Citations) ACTIVE

(60) Surcharge Loading of Flexible Retaining Walls. To determine earth pressure distribution on a flexible retaining wall subjected to railroad surcharge loading. R. M. Pyskadlo, W.W. Renfrew. HRIS 63-135658 INACTIVE

(61) Total Automation of Consolidation Testing. To develop a computer-controlled automated consolidation testing system for one-dimensional testing on a 24-hour 7—day a week basis. R.J. Weaver. HRIS 64-110392 ACTIVE

c. New York State Department of Motor Vehicles, Research and Development Division,
Empire State Plaza, Albany, 12228

(1) Validation of the License Road Test. To determine if a relationship exists between the road test score and future driving performance. S.K. Cortley. HRIS 51-192916 ACTIVE

(2) Traffic Safety Law Enforcement and Disposition System. To demonstrate the need for traffic ticket accountability as it relates to highway safety. M. Marks, E. Wright. HRIS 51-192915 (Citations) ACTIVE

32. NEW YORK (contd)

c. (3) Study of Single-Vehicle Fatal Accidents. To ascertain factors involved in such accidents in which fatally injured driver is the only person involved. S.R. Paskin. HRIS 51-177827 INACTIVE

(4) Fatality Analysis File. To test feasibility of large scale multi-state consolidation data plans and provide criterion data base for program evaluations. HRIS 51-045062 ACTIVE

(5) Evaluation of the Simulator as a Driver Testing Device. To establish the correlation between driver reactions in a simulated driving environment and actual driving proficiency, and identify elements of examination questions that would assist in discriminating between experienced and inexperienced drivers. J. F. O'Brien. HRIS 51-177824 (Citations) ACTIVE

(6) Emergency Health Services Data Subsystem. As part of record system covering all courses relating to emergency health care, provide a tool to assess services, plan future activities, and analyze trends in the field of emergency care. M. Marks, S. Slevinski, J. Eisenhandler. HRIS 51-192914 (Citations) ACTIVE

(7) Educational Services Data Subsystem. Part of a record system covering all driver instruction facilities, needed to support management and control of driver education activities. M. Marks, B. Bodi. HRIS 51-192913 (Citations) ACTIVE

(8) Accident Motorist Vehicle Study. To develop a data bank on accidents, drivers, and vehicles. C.W. Bostick, D.B. Negri, R.K. Riley. HRIS 51-135628 (Citations) COMPLETE

(9) Automated Written Test. To develop an automated system for testing driver applicants, and test driver knowledge, independent of reading ability. S.K. Cortley. HRIS 51-192912 ACTIVE

(10) LORAN-C Demonstration. A study of the capability of this system to provide automatic location of police and emergency vehicles. C.W. Mosher. HRIS 51-177825 ACTIVE

(11) Evaluation of New York State Drinking Driver Program. To measure program effectiveness in terms of conviction and accident frequencies and/or rates, and the impact on court handling of alcohol-related traffic charges. C. W. Bostick, S.K. Cortley, B.J. Ginett, R.K. Riley. HRIS 52-177823 ACTIVE

(12) The Role of Heart Disease and Circulatory Defects in Causing Motor Vehicle Accidents. To determine if a significant relationship exists between cardiovascular disease and incidence of accidents. J. F. O'Brien. HRIS 52-177826 COMPLETE

(13) Vision Testing. An evaluation of visual performance standards for driver licensing covering tests for other than the present test for static vision, and determine which of these additional tests indicate that there exists a detrimental effect on highway safety. J. F. O'Brien. HRIS 52-192917 ACTIVE

(14) Comparison of Alternate Modes in the Treatment of Drinking Drivers. To compare the results of two different rehabilitation programs. C.W. Bostick, D.J. McNaughton. HRIS 52-156649 COMPLETE

d. New York State Government: Albany, 12247

(1) Proposed Rural Transportation Demonstration Project. Continuing operation of this project in Chautauqua County, covering radio communication in buses, special vehicles to provide service to the handicapped, etc. M.M. Cuomo. HRIS 11-179583 ACTIVE

32. NEW YORK (contd)

d. (2) Transportation in New York State. A study covering all aspects and modes of transportation with in the state, including planning, operations energy consumption, noise control, etc. J.F. Zimmerman, M.N. Mitchell. HRIS 12-110852 (Citations) ACTIVE

e. New York State Metropolitan Transportation Authority: 1700 Broadway, New York, 10019

(1) Double Deck Buses. To demonstrate and evaluate double deck buses operating in daily revenue service. HRIS 11-058012 ACTIVE

f. Port Authority of New York and New Jersey: One World Trade Center, Room 72w, New York 10048

(1) Ridesharing Feasibility Study for Port Authority Vehicular Facilities between New York and New Jersey. To determine feasibility of a ridersharing program to encourage additional car and vanpooling among motorists using six Port Authority bridges and tunnels. L. Mayer. HRIS 12-192911 ACTIVE

(2) Support of UMTA Technical Studies. To act as coordinator for the Urban Mass Transportation Administration in carrying out technical studies of that agency undertaken by cities, counties and others. HRIS 12-082420 ACTIVE

(3) Development of Urban Travel Generation and Service Measurement Models. Studies of the decisions made on job location and dwelling selections which establish main travel patterns in urban areas, so as to derive measures of service and design of facilities to accommodate travel. O. Perilla. HRIS 13-110463 (Citations) INACTIVE

(4) George Washington Bridge Bus Station Access and Survey Study. To develop recommendations to improve the bus station's attractiveness to users and its service to the community. L. Mayer. HRIS 15-192909 ACTIVE

(5) Tunnel Ventilation Study. Studies designed to predict effects of weather, traffic, and ventilation strategies have on users and employees. HRIS 17-107610 ACTIVE

(6) Radar Evaluation of Concrete. To determine if downward looking radar can be used to dynamically evaluate condition of concrete roadways or other masonry structures. T.R. Cantor, C.P. Kneeter. HRIS 24-156675 (Citations) ACTIVE

(7) Cable Evaluation by Acoustic Emission Tests. To determine if this technique can be used to non-destructively identify minute differences in condition of bridge suspension cables. C.P. Kneeter. HRIS 25-156648 (Citations) ACTIVE

(8) Salt and Concrete. A study of the basic relationship between salt and concrete. T.R. Cantor, C.P. Kneeter. HRIS 32-156683 (Citations) ACTIVE

(9) Steel Reinforcing Bar Corrosion. To study the relationship between concentrations of corrosive materials, temperature, pH, etc., on reinforcing steel and develop a protective system to inhibit or mitigate corrosion damage. T.R. Cantor, P. Quinn. HRIS 40-156687 ACTIVE

(10) Staggered Work Hours Program - Lower and Midtown Manhattan and Downtown Newark. To plan, design, implement and evaluate the organized effort for voluntary shifting of work hours away from the predominant 9 to 5 schedule. A. Mayer. HRIS 54-135657 (Citations) ACTIVE

(11) Urban Corridor Demonstration Program - Manhattan CBD-North Jersey Corridor (Part II) Transportation Management System in the I-495 Corridor. To develop the bus priority system to expedite traffic movement in peak periods through the corridor between the New Jersey Turnpike and the Bus Terminal. HRIS 54-108517 (Citations) ACTIVE

32. NEW YORK (contd)

f. (12) Tolls Automation Study. To investigate the use of automatic toll collection machines at Port Authority Crossings and the automatic collection of commutation fares. HRIS 54-107608 (Citations) ACTIVE

(13) I-495 Lincoln Tunnel PM Peak Period Study. Collection of data to identify afternoon traffic patterns through the Lincoln Tunnel so as to expedite bus flow. L. Mayer. HRIS 55-192910 ACTIVE

i. Cornell University: Ithaca, 14853

(1) An Exploratory Analysis and Assessment of Electronic Message Transfer. A study of the potential of electronic mail handling schemes for conserving energy and other resources and the costs and benefits to society. R. Bowers, A. Meyburg. HRIS 15-192906 ACTIVE

(2) Structural Properties of Very High Strength Concrete. Investigation of the fundamental nature and engineering properties of normal and lightweight concretes having uniaxial compressive strength in the range from 6000 to 12,000 psi. A.H. Nilson. HRIS 32-192907 (Citations) ACTIVE

(3) Planning and Construction of Improvements to Local Rural Road Networks. To evaluate gravel sources for highway use; upgrade marginal sources using lime, cement and other soil stabilizers; evaluate embedment depth of aggregate and other causes of bleeding in bituminous surface treatments. L.H. Irwin. HRIS 33-082409 ACTIVE

(4) Mixing and Compaction Strategies for Cement Stabilization of Soils. Determine the effect of time delay after mixing on compactive effort and density and the effects of cement stabilizer additions. L.H. Irwin, C.D. Ditmars. HRIS 33-138516 (Citations) COMPLETE

(5) Basic Strength Properties of Stabilized Soils. To evaluate the strengths of various soil-stabilizer combinations according to several failure theories. L.H. Irwin, C.D. Ditmars. HRIS 62-177818 (Citations) ACTIVE

k. Polytechnic Institute of New York: 333 Jay Street, Brooklyn, 11201

(1) Transportation Systems Management Element Guideline Review. To review a representative sample of TSM plans to evaluate their format and organization. K. W. Crowley, M.F. Huss. HRIS 11-059916 (Citations) COMPLETE

(2) Energy Conservation in the Transportation Sector of New York State. An assessment of energy conservation so as to recommend priorities. L.J. Pignataro, W. R. McShane. HRIS 11-156655 (Citations) COMPLETE

(3) Evaluation of a New York City Bus Signing Experiment. To determine the attitude of bus users regarding a new experimental bus route signing system in a 30-block area of Midtown Manhattan, which include a map of the route, including transfer points. E. J. Cantilli. HRIS 12-135639 (Citations) COMPLETE

(4) A Study of Long Range Directions for Urban Public Transportation. To develop a set of plausible scenarios for the year 2000 from which urban and metropolitan passenger transportation needs can be determined. A. Weiner, L. Pignataro, W. Crowell, R. Sciedrys, A. Block, W. McShane. HRIS 12-177841 (Citations) COMPLETE

(5) Transit Route Planning in a Large Area. To develop the Route Allocation Model (RAM) to generate bus linkage paths in an environment with some service already fixed, such as rail rapid transit. L. Goldstein, W.R McShane, HRIS 12-082417 (Citations) COMPLETE

32. NEW YORK (contd)

k. (6) Ridership Profiles and Demographic Characteristics. To construct ridership profiles of users of various types of transit services and relate those profiles to underlying demographic variables. R.P. Roess. W.R. McShane. HRIS 12-135655 (Citations) COMPLETE

(7) Balancing Transportation Systems. To develop a rationale for the planning of transportation systems to meet mobility needs of the total population. J. C. Falcocchio. HRIS 12-135631 COMPLETE

(8) Insights into Ridership Variations and Related Modeling. To focus on the needs put on models of travel demand behavior and the uses to which they can be put. P. J. Menaker. W.P. McShane. HRIS 13-192943 (Citations) COMPLETE

(9) Study of Feasibility and Impacts of All-inclusive Transportation Trust Funds as a Mechanism for Transportation Finance. To study the feasibility of designing and implementing multi-modal transportation trust funds at Federal. state and regional levels. R. P. Roess. W.H. Crowell. HRIS 14-059894 COMPLETE

(10) Fare Structure and Policies. To develop a methodology for assessing applicability of such fare policies as zone. flat. shopper's loop. culture bus. and others. and determining rider response and social impact. P. Habib. HRIS 14-135642 (Citations) COMPLETE

(11) Impact of Transportation Control Plans on the Economy of the Manhattan Central Business District. To gain a better understanding of the potential impacts of such strategies as parking space reductions. bridge tolls. temporal truck delivery bans. etc.. on the viability of all types of businesses. W. Crowell. A. Bloch W. McShane. N. Hauser. W. Helly. HRIS 15-177838 (Citations) COMPLETE

(12) Facilitation of Urban Goods Movement. To develop a goods vehicle loading space allocation handbook for use by local transportation planners and engineers. K. W. Crowley. P.A. Habib. HRIS 15-135641 (Citations) COMPLETE

(13) Mobility of the Handicapped and of the Elderly. An evaluation of transportation services from the viewpoint of the elderly and handicapped user. J. Falcocchio. HRIS 15-135650 (Citations) COMPLETE

(14) Transit Noise: Cost Studies and Studies of Degradation of Improvements. An assessment of noise in the New York City Transit System. abatement methodology and cost. and noise degradation in rapid rail transit cars. W.R. McShane. S. Slutsky. HRIS 15-156692 (Citations) COMPLETE

(15) A Case Study of the New York- Albany Corridor: The Cost of Feasible Improvements and Their Effect on Modal Split. A study of the relative costs and efficiencies of the various intercity passenger transport modes operating in the corridor. with unit cost models prepared for existing modes. the potential for high-speed rail improvements. and feasibility of STOL/VTOL service. L.J. Pignataro. R.P. Roess. W.R. McShane. HRIS 15-100421 (Citations) COMPLETE

(16) The Mobility of People and Goods in the Urban Environment Tasks: (1) Mobility of the Handicapped and Elderly and (2) Facilitation of Urban Goods Movement. Identify needs and plans for transportation of the elderly and handicapped; develop guidelines for goods access facilitation. L. J. Pignataro. J.C. Falcocchio. K.W. Crowley. P. A. Habib. HRIS 16-045811 (Citations) COMPLETE

(17) What are the Total Energy Advantages of Public Transportation? A look at the energy effects of public transportation. including direct consumption. total energy burden. and non-transportation energy use due to influence of land use and other factors. HRIS 17-192945 ACTIVE

32. NEW YORK (contd)

k. (18) Seminar on Polymeric Materials and Their Use in Transportation. To conduct seminar for the purpose of disseminating the current state-of-the-art data on the hazards of flammability in transportation systems. E. Pearce. M. F. Huss. HRIS 34-156684 (Citations) COMPLETE

(19) Economic Feasibility and Potential of Producing and Using Alcohol Blends in New York State. An assessment of the economic feasibility of producing various alcohols blended with gasoline as an automotive fuel without adjustments to engines. W. McShane. W. Crowell. R. Sviedrys. S. Slutsky. R. Cardenas. HRIS 34-177836 ACTIVE

(20) System Safety - An Interdisciplinary Approach to Transportation Safety. A study of the applicability of system safety concepts at the planning and design stages of new transportation facilities. equipment or programs. and in the operational stages of existing facilities or ongoing programs. L.J. Pignataro. E.J. Cantilli. HRIS 51-058838 (Citations) ACTIVE

(21) Improving Pedestrian Cross-walk Safety One-way Street Networks. To identify the unique causal factors controlling accident experience on different crosswalks of intersections on one-way streets. P.A. Habib. HRIS 51-177839 (Citations) COMPLETE

(22) Pneumatic Energy Storage for On-vehicle Applications. To devise a pneumatic storage system for the kinetic energy of a decelerating vehicle and apply it to the subsequent acceleration. S. Slutsky. E. Levi. HRIS 53-192944 ACTIVE

m. University of Rochester. School of Medicine: Rochester. 14627

(1) A Program to Improve Safety and Injury Protection of Riders of Motorcycles. Minibikes and Mopeds. To establish and maintain a reliable data base for determining effectiveness of various regulations and safety equipment. J.D. States. HRIS 51-177843 (Citations) ACTIVE

p. Syracuse University: 201 Marshall Street. Syracuse

(1) Regional Financing Alternatives for Mass Transit. Comparison of alternative mechanisms for financing mass transit in terms of economic efficiency. equity. fiscal impact. locational and land use incentives and administrative feasibility. D. Puryear. HRIS 14-059897 ACTIVE

(2) Litigation as a Political Strategy for Advocacy Organizations - the Internal Impact. Research on the impact of litigation as a strategy for achieving political goals. S. O. Burke. M. Barkum. HRIS 70-192948 ACTIVE

q. Brookhaven National Laboratory. Associated Universities. Incorporated: Upton. 11973

(1) Combustion Studies of Alternate Fuels. A fundamental scientific study of the elementary chemical and physical phenomena occuring in such practical combustion devices as internal combustion engines. K.C. Hoffman. R.B. Klemm. D. J. Metz. HRIS 34-082408 (Citations) ACTIVE

(2) Development of Fuel Cell Technology for Vehicular Applications. Study of fuel cells as power sources for motor vehicles ranging from buses to automobiles. S. Srinvasan. J. McBreen. HRIS 53-177808 (Citations) ACTIVE

s. Calspan Corporation: P. O. Box 235. Buffalo. 14221

(1) Accident Investigation Methodology to Assess the Role of Vehicles Handling Performance in Highway Safety. To assess the actual and potential role of vehicle handling performance in accident prevention and severity reduction based on accident investigation and analysis. HRIS 53-160345 ACTIVE

32. NEW YORK (contd)

s. (2) Development of Approximating Solutions of CVS Program and Dummy Design Information. Evaluation of accuracies and sensitivities of various measures of crash victim response to the choice of and to the numerical values of various parameters used in simulators. J. Fleck. HRIS 53-156652 ACTIVE

(3) Development of Rollover Maneuver. Quantitative characterization of the nature of the vehicle rollover problem on both flat surfaces and in off-road trapping situations. R.R. McHenry. HRIS 53-156653 ACTIVE

(4) Evaluation of Occupant Protection Devices and Restraint Systems. To measure the response and kinematic performance of subjects restrained by advanced systems and protection devices; evaluate the performance of the restraint and protection systems; and determine effects and/or injuries produced by the restraint systems. HRIS 53-160146 ACTIVE

(5) National Crash Severity Study. Study of police-reported towaway accidents involving transport of victims to a treatment facility and overnight hospitalization or death, as well as sampling of lesser consequences. HRIS 53-160040 ACTIVE

(6) National Crash Severity Study Quality Control Program. To insure that field data collection efforts are efficient and consistent with the overall experimental design and sampling strategy, and that there is consistent interpretation of data elements. J. W. Garrett. HRIS 53-156673 ACTIVE

(7) Research Input for Computer Simulation of Automobile Collisions. Collection of data on crashes and put in a form useable: and collisions will be staged to provide results for use in the simulation program. HRIS 53-160206 ACTIVE

(8) RSV-Driver Air Bag System. To design, fabricate and perform component and subsystem tests for the Calspan research safety vehicle advanced driver air bag system. D. J. Romeo. HRIS 53-156682 ACTIVE

(9) Validation of the Crash Victim Simulator. To develop the CVS to a level that it can be used for a variety of rulemaking activities. F.E. Butter. HRIS 53-156693 ACTIVE

x. KLD Associates, Incorporated: 3000 Broadway, New York. 11746

(1) Establishment of National Accident Sampling System Team. To assist in establishing a uniform manner for collecting accident details, such as highway environment, vehicle damage, weather, etc. as well as interviews of those involved. P. Burge, J. Cohen. HRIS 51-177820 ACTIVE

(2) Expansion of Computer Model Scot Capabilities. Study of traffic signalization and bus scheduling and priority strategy. HRIS 54-058326 ACTIVE

ad. New York City Department of Air Resources: 75 Frost Street, Brooklyn. 11211

(1) Evaluation of Emissions Inspection and Maintenance of Heavy Duty Vehicles. To examine the benefits of periodic emission inspection and maintenance of in-use gasoline-fueled heavy-duty vehicles, in order to reduce urban air pollution. W. Friberg, J. Pinto, P. Traffas. HRIS 53-156657 ACTIVE

ai. State University of New York: Buffalo. 14214

(1) Evaluation of Long Span Metal Plate Arches. To evaluate the performance of a Republic Steel Corporation Maxi-Span Sectional Plate Arch Structure. E.T. Selig, I.G. Dreining. HRIS 25-192947 ACTIVE

32. NEW YORK (contd)

ai. (2) Impact of Journey Structure on Destination Selection. To formulate and test a probabalistic model of destination choice that will enable assessment of the role of journey structure on destination selection. S. Hanson. HRIS 55-177835 ACTIVE

al. Electric Testing Laboratories. Incorporated: Industrial Park. Cortland. 13045

(1) Testing of Motor Vehicle Lamps, Reflective Devices and Associated Equipment. HRIS 53-058766 ACTIVE

ax. Rensselaer Polytechnical Institute. School of Management: Troy. 12182

(1) Impact of Offshore Sand and Gravel Mining on Availability and Costs of Construction Minerals in the Greater New York Metropolitan Area. To determine the economic impact of production and distribution of offshore mining and the effect on consumer expenditures in the area. W.A. Wallace. HRIS 35-156665 (Citations) ACTIVE

bd. Paul Claffey Engineers: 26 Grant Street. Potsdam. 13676

(1) Effect of Weather on Passenger Car Fuel Consumption. To measure fuel consumption for operation when snow is on the road surface. when the surface is icy. when there is wind. for temperatures from freezing down to 20 F below zero. and for wet pavement. P. Claffey. HRIS 53-177816 ACTIVE

be. Community Center for Alcoholics of Jefferson City: 595 West Main Street. Watertown. 13601

(1) Community Services Poverty Alcoholism Project. To provide rehabilitative services to individuals and families with alcohol related problems. P. Hinckley. HRIS 52-177817 ACTIVE

bf. Roger Creighton Associates. Incorporated: 274 Delaware Avenue Delmar 12054

(1) Market Study of the New York State Barge Canal System. To define cargo potential and transportation benefits of the canal and develop effective marketing strategy. F. W. Memmott. HRIS 15-177819 ACTIVE

bg. Singstad. Kehart. November and Hurka: One World Trade Center. New York. 10048

(1) Economic Factors in Tunnel Construction. To develop a new cost estimating system for tunneling for evaluating cost impact of planning and designing urban transportation tunnels. E. Foster. I. Toporoff. HRIS 25-129710 ACTIVE

bh. Vera Institute of Justice: 30 East 39th Street. New York. 10016

(1) Experimental Transportation for Elderly and Disabled. A study of the effect of readily accessible. low-cost transportation for these individuals and comparison of cost-effectiveness of a single. multi-purpose transportation service with the current fragmented arrangement of specialized services now available. L.N. Friedman. A. Simmel. J. Waring. HRIS 12-177844 ACTIVE

bi Weidlinger Associates: 110 East 59th Street. New York. 10022

(1) Underground Lifelines in a Seismic Environment. To improve the knowledge of the behavior of utility lines in a seismic environment and apply this to the planning design and construction of life line structures. M.L. Baron. HRIS 25-177845 ACTIVE

33. NORTH CAROLINA

a. North Carolina Department of Transportation, Division of Highways: P.O. Box 25201, Raleigh, 27611

(1) Rural Transportation Planning Project. To collect data about rural transportation needs of the Appalachian portions of North Carolina and assist in development of an overall rural and community transportation policy. J.W. Grimsley. HRIS 16-192957 ACTIVE

(2) Evaluation of Guard Rail Energy Absorbing Terminals. To evaluate the effectiveness of these terminals in relation to a cable type in reducing accident severity damage. M. P. Strong. HRIS 21-192953 ACTIVE

(3) Evaluation of MONOGRAM Recirculating Oil Sewage Disposal System. To evaluate the effectiveness of the System for highway rest areas. M.P. Strong. HRIS 23-192954 ACTIVE

(4) Use of PREPAVE to Prevent Reflective Cracking. To evaluate the effectiveness of this product in retarding or preventing cracking on pcc pavement. M.P. Strong. HRIS 24-192959 ACTIVE

(5) Evaluation of Water Proofing Systems in Preventing Bridge Deck Deterioration. To determine effectiveness and relative cost of sealing bridge decks against moisture and salt intrusion by use of a water proofing membrane. M.P. Strong. HRIS 25-192955 ACTIVE

(6) Evaluation of Experimental Features in Highway-Water-Tight Bridge Joints. Comparison of elastomeric expansion joints with molded steel inserts, aluminum armored expansion joints, and control joints filled with typical solid sealants. M.D. Strong. HRIS 25-103031 ACTIVE

(7) Evaluation of Damp Proofing Methods for Retarding Corrosion in Prestressed Concrete Piles in Salt Water. To determine the ability of selected damp proofing methods to inhibit chloride migration and prevent or retard corrosion. Atkinson. HRIS 32-192951 ACTIVE

(8) Evaluation of Fog Detection and Warning Devices. To evaluate the effectiveness of two fog detection devices and 19 special changeable regulatory warning signs in reducing accidents on a highway susceptible to dense fog. M.P. Strong. HRIS 51-192952 ACTIVE

b. Duke University: Durham, 27706

(1) Sensitivity to Driving Impairment with Drugs of Abuse. To examine the effects of diazepam and pentobarbital on psychomatoc skills related to driving in normal, anxious, sedative-tolerant and aged populations. E.H. Ellinwood and others. HRIS 52-179620 ACTIVE

(2) Penetration Resistance of Cohesionless Soils. A theoretical and experimental study of static and dynamic penetration resistance in such cohesionless soils as sands. A. S. Vesic. HRIS 62-109509 ACTIVE

(3) Model Tests in Integrated Study of Tunnel Excavation Behavior. A study of the magnitude and relationship among various soil displacements, such as ground loss, volume change around the tunnel and settlement trough, the relationship between support systems and movements. Y. Tsui. HRIS 63-177847 ACTIVE

33. NORTH CAROLINA (contd)

c. North Carolina Agricultural and Technical State University. Transportation Institute: Greensboro. 27411

(1) Transit Problems in Small Cities and Nonurbanized Areas; The Impact of Programs on the Elderly and Handicapped and Attitudes of Local Taxi Operators. To investigate the impact of 16(b)2 transit programs on travel patterns of elderly and handicapped riders in three selected small urban areas; investigate changes in travel behavior and the effect on local taxi operators' attitude towards the program. G. Amedee. HRIS 11-177854 (Citations) ACTIVE

(2) Transit Problems in Small Cities and Nonurbanized Areas: An Inventory of Transportation Systems that Service Places Less than Ten Thousand in Population and are Outside of Urbanized Areas. To develop techniques for data gathering that could be used as policy input. A. Jackson. D. McKelvey. HRIS 11-177855 (Citations) ACTIVE

(3) Evaluating Rural Public Transportation Demonstration. To contribute to the overall measure of the success and evaluation of these demonstrations. J.H. Johnson. HRIS 11-058760 (Citations) ACTIVE

(4) Regulatory and Institutional Barriers to Paratransit and the Ways of Overcoming those Barriers. To review state and local regulations and provisions affecting paratransit and examine case studies of paratransit that have led to innovation in institutional arrangements. L. Sen. J. Benjamin. HRIS 11-177852 ACTIVE

(5) Sources of Non Federal Support for Public Transportation in Nonurbanized Areas. To determine the extent to which states and localities have been spending nonfederal funds in support of such transportation. A. E. Kidder. HRIS 14-177853 COMPLETE

(6) Travel Needs and Solutions of Low and Middle Income Urban Residents. A Comparative Study (Second Year). To identify new markets for an integrated transit system based on a study of travel behavior in Richmond. Virginia. L. Sen. J. Benjamin. HRIS 15-177856 (Citations) ACTIVE

d. North Carolina State University: Raleigh. 27607

(1) Environmental Problems Peculiar to Highway Construction in the North Carolina Coastal Areas. To determine the effects on the fauna. vegetation and fresh water table so that meaningful environmental impact statements can be written. J. M. Miller. HRIS 23-156702 ACTIVE

(2) Some Problems Peculiar to Highway Construction in North Carolina Coastal Areas. To determine the environmental impact of highway construction on fauna of marshlands and estuaries. vegetative cover and revegetation of modified areas and the freshwater table,Miller. HRIS 23-192969 ACTIVE

(3) Establishment. Adaptation and Management of Turfgrasses. Study of the effects and relationships of the environmental factors of temperature. moisture and soil types and the cultural factors of planting date. fertility levels and cutting heights and frequency on the establishment of turf species. W.B. Gilbert. HRIS 23-156703 (Citations) COMPLETE

(4) Surface Wear and Skid Resistance Properties for Portland Cement Concrete Pavements. Laboratory evaluation of wear and skid resistance as these properties may be affected by aggregates. mix design. surface texture. construction methods. curing methods and test speed. W.G. Mullen. J.K. Whitfield. HRIS 24-102064 (Citations) ACTIVE

(5) Evaluation of Base Courses for Flexible Base. Statewide analysis of the performance of these bases so as to propose adjustments in design criteria. if necessary. W.G. Mullen. L.S. Langfelder. W.J. Head. HRIS 24-020559 (Citations) ACTIVE

33. NORTH CAROLINA (contd)

d. (6) Deflection Criteria for Wind Induced Vibrations in Cantilever Highway Sign Structures. To establish design criteria for such structures which exceed 40 feet. Edwards. HRIS 25-192962 ACTIVE

(7) Camber in Prestressed Girders. Determine magnitude and characteristics of time dependent factors affecting camber of prestressed girders. Mirza. HRIS 25-192960 ACTIVE

(8) Evaluation of the Effectiveness of Fabric Reinforcements in Extending the In-service Life of Bituminous Concrete Overlays. To determine the effectiveness of fabric as well as other reinforcing schemes in reducing reflective cracking. W.J. Head. HRIS 31-103610 (Citations) ACTIVE

(9) Mixing Water and Maturity of Hardened Concrete Using SEM Techniques. To develop visual comparison standards of SEM photographs to permit determination of original water-cement ratio and degree of hydration of hardened pcc. Mullen. HRIS 32-192964 ACTIVE

(10) A Computer Program for Determining Tensile Stresses in Prestressed Members due to Cable Restraint During Tensioning. To develop a general computer program for computation of cable force during detensioning for any multiple girder prestressing operation. Mirza. HRIS 32-192961 ACTIVE

(11) The Precision and Limits of Detection of Nondestructive Pulse-Velocity Testing Techniques for Concrete Bridges. To define limits of precision for the technique. the dimensions of the smallest flaw that be detected and recommend procedures for using the technique. Barnes. HRIS 34-192966 ACTIVE

(12) Dynamic Stress Analysis of Steel Girders during Transit over the Road. To determine the extent to which stresses induced dynamically during tranport to the construction site are potentially damaging to beams. Bingham. HRIS 34-192963 ACTIVE

(13) Polymer Concrete for Repairs. To develop polymer aggregate mixtures for patching and crack-filling binder for fractured concrete. and to adapt microwave curing techniques for field use. W.G. Mullen. HRIS 40-082372 INACTIVE

(14) Occupational Safety and Health in Agriculture. A study of vibrations in vehicle cabs and their effects on the human body and its components. C.W. Suggs. HRIS 41-192965 (Citations) ACTIVE

(15) Runaway Truck Arresting Schemes. To identify and evaluate methods for stopping runaway vehicles on downgrades. Whitfield. HRIS 54-192968 ACTIVE

(16) Relating Traffic Volume Traffic Lane Width and Accidents for Continuous Flow Sections of Multilane Urban Arterials. To measure the quality of traffic flow and safety of different lane widths and develop guidelines for evaluating alternative improvement strategies for urban arterials. Cribbins. HRIS 55-192967 ACTIVE

e. University of North Carolina: Chapel Hill. 27514

(1) Planning for Regional Environmental Quality Management and Related Use and Transportation Systems. To develop a method for planning environmental quality management systems and related land use and transportation systems in regions that are under pressure of urbanization. D.H. Moreau. HRIS 11-156705 ACTIVE

(2) Methods for Selecting. Planning. Managing and Evaluating Recreational Sites. Phase II. To determine the extent to which existing ground of homes for elderly and selected recreational sites meet user needs in accord with preference and recreational objectives. C.L. Fountain. HRIS 11-138418 ACTIVE

33. NORTH CAROLINA (contd)

e. (3) Cross National Comparative Research in National Transportation Systems. Preparation of data files describing characteristics of transportation systems and associated demographic, socioeconomic, energy use and political national characteristics for 1950 through 1970, at five year intervals. S.E. Clarke HRIS 11-156699 ACTIVE

(4) Taxicab Fare Elasticity and Performance Measures. To determine how fare elasticities for taxi services vary from city to city and among different economic subgroups, and how specific performance measures vary. G. Gilbert. HRIS 12-177857 ACTIVE

(5) Small City Paratransit Innovations. Study of paratransit innovations in small cities. G. Gilbert. HRIS 12-059908 ACTIVE

(6) Evaluation of Public Response to the Chapel Hill Bus System. To evaluate the response of the public to a new bus system and the role of disincentives to auto usage in promoting bus usage. G. Gilbert. HRIS 12-082364 COMPLETE

(7) A Comparative Study of Urban Lifeways. Research into lifeways of people in low-income circumstances and how the activity patterns of the poor living in white suburbia compare with those living in the central city black ghetto. HRIS 16-110641 ACTIVE

(8) Requirements Analysis for Heavy Vehicle Driver Licensing. To define the requirements for drivers of heavy trucks, and then devise ways to be sure that the drivers meet these standards. P. F. Waller. HRIS 51-192979 ACTIVE

(9) Moped Accident Analysis. To obtain a better understanding of the moped accident situation in the State. W.W. Hunter. HRIS 51-192978 ACTIVE

(10) Injury Scaling Research. To improve the usefulness of accident data for analyses by defining and calibrating injury scales to predict injury and fatality societal consequences. HRIS 51-160212 ACTIVE

(11) Improvement of North Carolina School Bus Driver Training Process. To revise and upgrade the visual aids used in the classroom phase of the bus driver training program. B.T. Orr. HRIS 51-192976 ACTIVE

(12) Identification of Driver Licensing Research Requirements. To develop a model driver licensing system and identify the associated research needs on the basis of their potential payoff in accident loss reduction. P.F. Waller. HRIS 51-192975 ACTIVE

(13) Coordinated Driver Improvement. To examine the relationship between literacy and driving performance to determine if literacy should be required of all new drivers. P.F. Waller. HRIS 51-192973 ACTIVE

(14) Statistical Evaluation of Eight Federal Motor Vehicle Safety Standards. To determine if the standards for head restraints, side door strength and fuel system integrity are effective, as a part of the overall evaluation. D.W. Reinfurt. HRIS 51-192980 ACTIVE

(15) An Analysis of Mopeds as a Potential Problem in the United States. To establish a data base of future moped accident research. W.W. Hunter. HRIS 51-192971 ACTIVE

(16) Accident Investigation Team: Pilot Study of Bus Crashes. To determine if in-depth on-scene investigations of school bus accidents by a trained investigative team can improve bus safety. J.H. Lacey. HRIS 51-192970 ACTIVE

33. NORTH CAROLINA (contd)

e. (17) Increasing Child Restraint Usage through Physician and Public Education. To increase usage rates by children by educating physicians about benefits to be obtained from their use. F.M. Council. HRIS 53-192977 ACTIVE

(18) Child Restraint Workshops. To demonstrate to grass roots organizations ways in which they can help increase child restraint usage rates. B.T. Orr. HRIS 53-192972 ACTIVE

(19) Effect of Anisotrophy and Pore Pressure on Brittle Fracture of Rocks; Sliding Friction in Mylonites and Their Source Rocks. To refine failure criteria for anisotropic rocks and to develop techniques for controlling in situ fracture growth. D.E. Dunn. HRIS 63-110155 ACTIVE

k. System Science, Incorporated: P. O. Box 2345, Chapel Hill, 27514

(1) Assessment of Human Exposure to Mobile Source Pollutants. Measurement of pollutants on a Los Angeles freeway and estimate current and projected impact if all cars were catalyst-equipped. S.J. Freedman, I.J. Shiffer, M.G. Smith, A. V. Hardy. HRIS 17-177858 ACTIVE

34. NORTH DAKOTA

a. North Dakota Highway Department: State Highway Building, Bismarck, 58505

(1) Evaluation of Lakota Test Road. Observe and evaluate the 76 test sections constructed in 1973 until such time as it becomes necessary to reconstruct or overlay the entire four mile section. D. Leftwick. HRIS 24-192981 ACTIVE

(2) Determination of Water Content of Plastic Concrete Using a Microwave Oven. To develop a procedure using a microwave oven to measure water content of concrete. R. T. Peterson, D. Leftwick. HRIS 32-177859 (Citations) COMPLETE

(3) Implementation and Operation of Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program and a means to evaluate the program. W. R. Hjelle. HRIS 51-038091 ACTIVE

(4) The Economic and Traffic Effects of Bismarck's Seventh and Ninth Streets One-Way Pairs. An economic impact evaluation and analysis of effects in the changes in traffic flow, in land values, accidents, noise, pedestrian movements, etc. J. Cameron. HRIS 55-156706 ACTIVE

(5) Study of Seal Coat Stripping. To determine cause of occasional seal coat stripping when using chips and emulsified asphalt. R.T. Peterson, D. Leftwick. HRIS 24-156709 COMPLETE

b. North Dakota State University: Fargo, 58102

(1) The Feasibility of Establishing Wheat Gluten Plants in North Dakota. To determine the feasibility of such a plant, including an analysis of transportation requirements. E. E. Anderson, D. L. Helgeson. HRIS 15-195916 ACTIVE

(2) Evaluation of Alternative Rural Freight Transportation, Storage and Distribution Systems. An evaluation of the economic effects of alternative governmental policies on shippers, receivers, carriers, and rural communities. D.W. Cibia. HRIS 15- 156707 ACTIVE

(3) Economic Analysis of the United States Grain Exporting Systems. An evaluation of private versus State trading systems for grains. D.E. Anderson. HRIS 15-083533 (Citations) ACTIVE

34. NORTH DAKOTA (contd)

b. (4) Base and Surfacing Evaluation Study. A field evaluation of performance of different base and surface materials. O. E. Manz, J. L. Jorgenson. HRIS 24-102018 COMPLETE

(5) Field Study of the Behavior of Abutment Piles in an Integral Abutment Bridge. To measure displacement and strains of an integral abutment bridge and evaluate the possibility of extending maximum height from 12 feet to 20 feet for this type of structure. J. Jorgenson. HRIS 25-156708 ACTIVE

d. Three Affiliated Tribes. Fort Berthold Indian Reservation. New Town. 58763

(1) Develop a Ferry System on the Ft. Berthold Indian Reservation. To develop a ferry system across a man made resevoir to cut travel distances and conserve energy. A. Guimont. HRIS 12-192982 FUTURE

35. OHIO

a. Ohio Department of Transportation: 25 South Front Street. Columbus. 43216

(1) Field District Computer Terminal Usage Implementation Study. To evaluate the feasibility of installing district terminals for computer operations. based on survey of what other states are using. T.E. Steva. HRIS 11-135710 COMPLETE

(2) Pavement Condition Evaluation Utilizing Dynamic Deflection Measurements. A study of deflections on both flexible and rigid pavements. with emphasis on dynamic deflection of rigid pavements designed to prevent D-cracking. K. Majidzadeh. HRIS 24-156722 COMPLETE

(3) Observations of Field Performance of Continuously Reinforced Concrete Pavements. To continue seasonal observations of CRC pavements to gather long-term performance data and study failures. K. Majidzadeh. HRIS 24-082406 COMPLETE

(4) Continuing Field Evaluation of Membrane Waterproofing for Concrete Bridge Decks. A study of the effects of traffic. use of deicing salts. temperature extremes. etc., on this type of waterproofing over a four year period. R.J. Carroll. HRIS 24-082397 COMPLETE

(5) Development of Laboratory and Field Methods for Detecting D-Cracking Susceptibility of Ohio Coarse Aggregates in Concrete Pavements. To develop both field and laboratory methods for determining this susceptibility. J.T. Paxton. HRIS 35-135705 ACTIVE

(6) Evaluation of Acoustic Spectrum from a Concrete Delamination Detector. Study of methods and procedures for detection of delamination and the discriminate between delamination and debonding. as well as the detecting depth of delamination. K. Majidzadeh. HRIS 40-156713 COMPLETE

(7) Development of a Method to Establish Current Resurfacing Priorities. To develop procedures for establishing a priority listing of pavement in need of resurfacing and provide statistical data describing existing conditions. C.H. Groves. HRIS 40-105642 COMPLETE

b. Akron University: Akron. 44325

(1) Field and Laboratory Evaluation of Energy Dissipators for Culvert and Storm-Drain Outlets. To evaluate the performance of various schemes to protect culverts and storm drains by dissipating the energy from water flow. A.L. Simon. S. Sarikelle HRIS 22-101061 ACTIVE

(2) Field and Laboratory Evaluation of Roadside Park Wastewater Treatment Plants. To develop methods for upgrading sewage effluents discharging from roadside rest areas. G.P. Manos. HRIS 23-135709 COMPLETE

35. OHIO (contd)

b. (3) Causes, Measurement and Prevention of Pavement Forces Leading to Blowups. An evaluation of pavement-joint-structural subsystem interaction with regard to problems related to the development of longitudinal forces and movement in pavement systems. A. M. Richards. HRIS 24-135701 COMPLETE

(4) An Evaluation of Bridge Approach Design and Construction Techniques. Field observations and theoretical considerations of vertical, lateral and longitudinal embankment movements and generated forces associated with bridge approach embankments. D. Timmerman. HRIS 25-110160 COMPLETE

(5) Roughness Characteristics of Rock-Lined Channels. An evaluation of field performance of rock lined channels to measure roughness. A. L. Simon. S. Sarikelle HRIS 22-177860 ACTIVE

c. Case Western Reserve University: Cleveland, 44106

(1) Reliability and Optimization of Structural Systems. To study classes of structural loads affected or controlled by human actions such as highway vehicles, floor loads or even snow loads. F. Moses. HRIS 25-192985 ACTIVE

(2) Load Factor Design for Substructures and Retaining Walls. To review current literature and develop recommendations for use of load factor approach to design of foundations and earth retaining structures. F. Moses. HRIS 25-192984 COMPLETE

(3) Pile and Pile Driving Hammer Performance for "H" Piles Driven to Rock. To examine the performance, during driving, of these piles, particularly the conditions under which the tips are damaged enough to affect the strength. G. G. Goble. HRIS 62-135712 COMPLETE

d. Cincinnati University: Mail Location 71, Cincinnati, 45221

(1) Determination of Importance of Various Parameters on Performance of Rigid Pavement Joints. To determine the joint configuration, slab configurations and type of subbase that will give optimum durability and life to pcc pavements. I. Minkarah. HRIS 24-177861 ACTIVE

e. Ohio State University: Columbus, 43210

(1) UMTA Research and Training Grant. To determine feasibility of urban consolidation freight terminals to facilitate the pick up and delivery of small shipments in central urban areas. HRIS 12-110544 COMPLETE

(2) Optimal Price and Rationing Policies. To formulate and evaluate medium-run price (tax) and rationing strategies as related to fuel for automotive use. D. A. Hanson. HRIS 13-135696 COMPLETE

(3) Evaluation of Alternative Rural Freight Transportation Storage and Distribution Systems. To estimate rural freight requirements to 1985 and 1990 and estimate the optimal rural freight transportation, storage, and distribution systems. D. W. Larson. HRIS 15-156714 (Citations) ACTIVE

(4) Predicted Effects of Selected Policy and Technology Changes on the Grain Marketing System. An evaluation of the impact of changes in governmental policies and technology on the marketing system. J. Sharp. HRIS 16-083541 (Citations) INACTIVE

(5) Effects of Alternative Pricing Structures and Pooling Methods on the Dairy Industry in the Northeast. To assess impact of these alternatives on supply, utilization, consumption, producer and consumer prices, and producer income of milk. D. E. Hahn. HRIS 16-083538 (Citations) ACTIVE

35. OHIO (contd)

e. (6) Evaluation of Illumination Designs for Accident Reduction at High Nightime Accident Sites. To develop a reliable objective technique for evaluating potential accident reduction effectiveness of illumination at such sites. T. H. Rockwell. HRIS 21-100791 COMPLETE

(7) Highway Crash Barriers. Investigation of an articulated, energy absorbing, highway crash barrier utilizing hydraulic shock absorbers and massive beams. T. G. Foster, D. Kussow. HRIS 21-106563 INACTIVE

(8) Applied Research in Analytical Photogrammetry. To establish an aerial analytical photogrammetric process and improve the accuracy and reliability of its applications. D. Merchant. HRIS 21-192990 ACTIVE

(9) Shade and Ornamental Trees for Street and Highway Landscape. To evaluate a variety of trees and plants for application in landscaping projects. T.D. Sydnor, P.C. Kozel, M. Kawase. HRIS 23-138420 (Citations) ACTIVE

(10) Study of Pavement Overlay Design. To devise a rational method of overlay design, giving consideration to anticipated traffic, previous performance history and pavement condition. K. M. Majidzadeh. HRIS 24-101487 COMPLETE

(11) Implementation of a Pavement Design System. To develop and improve a data bank for pavements and variables of load, environment and maintenance, predictive models for design, cost models to evaluate cost effectiveness of various design and maintenance strategies. K. Majidzadeh. HRIS 24-177869 ACTIVE

(12) Optimization of Design of Asphlatic Paving Mixtures. To optimize mixture design formulation for stability, durability, rutting, fatigue and overall field performance. K. Majidzadeh. HRIS 31-156720 ACTIVE

(13) Field and Laboratory Investigation of Experimental Pavements Using Low-Quality Aggregate. Study of the relation between aggregate quality, uniformity and mixing procedures on the resulting performance of the pavement, including predictions of the results that will be obtained. K. Majidzedeh. HRIS 31-156715 COMPLETE

(14) Evaluation of Performance of Asphaltic Mixtures with Deleterious Fine Aggregate. Study of the use of such material and its effect on the completed pavement. K. Majidzadeh, HRIS 31-192991 ACTIVE

(15) Aggregate Quality as Related to Flexible Pavement Performance. Study degradation of aggregate under environmental and loading conditions and determine allowable limits and types of low quality aggregates. K. Majidazdeh. HRIS 35-135699 COMPLETE

(16) Aerodynamic Interference between Cars and Trucks. Wind tunnel tests to determine aerodynamic side force and yawing moment on automobiles during a simulated passing of a large semi-trailer truck, as well as on a small sports car passing the truck. G. M. Gregorek, D. R. Lee. HRIS 53-111522 COMPLETE

(17) Improving Driver Performance on Curves in Rural Highways through Perceptual Changes. To use perceptual modifications and innovative signs to provide drivers with information in advance to allow them to develop compensatory response needed to safely negotiate the curve. T.H. Rockwell, V.D. Bhise, D. Shinar. HRIS 54-106336 (Citations) COMPLETE

(18) Signal Progression on Routes in Suburban to Rural Areas. To develop criteria for the introduction of signal progression on major state-controlled signalized arterials. J. Treiterer. HRIS 54-107990 COMPLETE

35. OHIO (contd)

e. (19) Development of Driver-Based Method for the Evaluation of Traffic Control Systems for Freeway Construction and Maintenance. To incorporate driver behavior into a system model of effectiveness for the evaluation of traffic control systems for freeway construction and maintenance operations. T. H. Rockwell. Z. A. Nemeth. HRIS 54-177867 ACTIVE

(20) Use of Delineation Systems to Modify Driver Performance on Rural Curves. A study of the lateral placement of drivers on curves during both day and night operation where delineators and pavement markers are used. T. H. Rockwell. HRIS 54-177870 ACTIVE

(21) Development of Guidelines for the Application of Continuous Two-way Left-Turn Median Lanes. To consolidate existing information on continuous two-way left-turn median lanes and conduct before and after studies at selected sites. Z. Nemeth. HRIS 54-107989 COMPLETE

(22) Soil Landscape Characteristics Affecting Land Use Planning and Rural Development. Physical soil measurements with determination in support of the Ohio Cooperative Soil Survey Program. G. Hall. HRIS 61-110793 ACTIVE

(23) A Statewide Study of Subgrade Soil Support Conditions. To provide such information for future work. K. Majidzadeh. HRIS 62-135716 COMPLETE

(24) Stability of Slopes in Shale and Colluvium. To improve maintenance practice and design of corrective measures through improved understanding of behavior of cut slopes in shale and clay. T. H. Wu. HRIS 63-192992 ACTIVE

(25) Stress, Deformations and Pore Pressure in Nonhomogeneous Anisotropic Saturated Soils under Arbitrary Loading. To develop numerical solutions for the problems of consolidation, pore pressure dissipation and settlement of foundations. R.S. Sandhu HRIS 64-110396 COMPLETE

f. Ohio University: Athens, 45701

(1) Traffic Signal Diagnostic Equipment and Preventative Maintenance. To develop equipment and procedures for field service, shop service, acceptance testing and training. D. Scheck. HRIS 54-192993 ACTIVE

(2) Economic Analysis of Pavement Marking Materials Acquisition, Distribution and Storage. An analysis of present practices and develop more cost-efficient methods for this activity. R. Stemmler. HRIS 54-135708 COMPLETE

g. Youngstown State University: Youngstown, 44503

(1) Scale Model of Low-density Concrete Impact Attenuators. To determine characteristics and design parameters of a full scale attenuator based on model laboratory tests. J. D. Bakos, Jr. HRIS 21-135714 COMPLETE

h. Battelle Memorial Institute, 505 King Avenue, Columbus. 43201

(1) Dynamic Properties of Packaging Materials in Transport Accidents. To develop data on dynamic material properties for materials of construction for shipping casks, particularly those properties required for analysis of transport accidents. T. A. Robinson. HRIS 34-135719 ACTIVE

(2) Structural Response of Nuclear Shipping Containers under Accident Conditions. The use of scale model techniques to experimentally study the behavior of typical nuclear high level waste and spent fuel transportation during simulated accidents. R. A. Robinson. HRIS 51-192983 ACTIVE

35. OHIO (contd)

s. Toledo University: 35 St. George Street, Toledo, 43606

(1) Effect of Time-Temperature Model on Duration of Asphlatic Concrete Construction Season. To develop a quantitative estimate of the effect upon duration of the bituminous paving season if the Time-Temperature model were applied. D. Colony, R. McNichols. HRIS 31-192995 ACTIVE

(2) University of Toledo Time-Temperature Model, Laboratory and Field Validation. To verify that measurement of the mat-base interface temperature is satisfactory for predictive purposes, with any base material used in Ohio, and test and modify the convective heat transfer coefficient if the UT time-temperature model conforms to requirements of Ohio specifications. R. Wolfe, G. Heath. HRIS 31-192996 ACTIVE

(3) Asphalt Pavement Cooling Rates - A Computer Simulation Study. To develop decision rules and design a device to implement those rules so as to identify the "go/no-go" conditions for late season asphalt construction. R.K. Wolfe. HRIS 33-135700 COMPLETE

(4) Research in the Theory of Optimum Mechanism Design. To extend and refine the Selective Precision Synthesis technique allowing mechanism designers to selectively choose the precision required at various positions of the mechanism cycle. S. N. Kramer. HRIS 90-135697 COMPLETE

t. Alfred G. Bishara: 4509 Norwell Drive, Columbus, 43220

(1) Latex Modified Concrete Bridge Overlays: Field Performance Analysis. To provide factual data on the field performance of latex modified concrete and mortar overlays. A.G. Bishara. HRIS 25-135711 (Citations) COMPLETE

ae. Lanco Industries: 30 East Columbus Street, Columbus, 43206

(1) Flexible Elastomeric Delineator Pole. To develop this pole to provide greater target value, recovery after impact, eliminate vehicle damage and reduce maintenance frequency and costs. J. Cowan, R. Welch, C. Waldbilling. HRIS 54-156717 ACTIVE

ag. Resource International, Incorporated: 30 East Wilson Bridge Road, Worthington, 43085

(1) Development and Implementation of a System for Evaluation of Maintenance and Repair Needs and Priorities. To develop a systematic method for monitoring pavement network conditions, assessment of road condition and rate conditions, determine priorities, and execute repair maintenance management. K. Majidzadeh, H. Guirguis. HRIS 24-192997 ACTIVE

(2) Long Term Observations of Performance of Experimenatal Pavements in Ohio. To conduct a long-term field observation of performance of instrumented and experimental pavements. K. Majidzadeh. HRIS 24-193000 ACTIVE

ah. Southwestern Ohio Regional Transit Authority: 36 East Fourth, Cincinnati, 45202

(1) Urban Transportation Laboratory. A cooperative program of analyses, experiments and demonstrations of innovative public transit services, equipment and operational methods. K. Armstrong, A.K. Ureinze. HRIS 12-135464 ACTIVE

36. OKLAHOMA

a. Oklahoma Department of Transportation: 200 North 21st Street, Oklahoma City, 73105

(1) Video Tape: A Research Implementation and Training Tool. To develop means of making training and information aids a part of overall research projects, and distribute while the research is in progress. C.M. Pederson; HRIS 11-177871 ACTIVE

36. OKLAHOMA (contd)

a. (2) Experimental Evaluation Program. To evaluate and test new products and equipment for use in the Department. M.D. Smith. HRIS 11-156731 (Citations) ACTIVE

(3) Solar Heating and Cooling for a Field Division Headquarters. To design and construct a solar heating and cooling system for a 32,000 sq. ft. structure, plus a shop building. HRIS 17-193004 ACTIVE

(4) An Experimental Study of Friction in Bridge Expansion Joints. To determine frictional forces generated by expansion shoes while accommodating bridge movement due to thermal loads. S. K. Kaul. HRIS 25-193002 ACTIVE

(5) Internally Sealed Concrete. To evaluate the effects of wax beads included in concrete mixtures have on concrete surfaces and their sealing ability on bridge decks. J. C. Stewart. HRIS 32-156738 (Citations) ACTIVE

(6) The Impact of Highway Construction on a Fresh Water Stream: A Demonstration Project. To demonstrate the ability to determine amounts of pollution contributed to streams by highway construction. E.B. Kidd, II, C.J. Hayes. HRIS 33-156736 ACTIVE

(7) Development of a Device to Evaluate the Retro-reflective Performance of Pavement Marking Materials. To develop a device to check retroreflectivity of in-place pavement striping and produce a permanent record of each highway section. Nelson. HRIS 34-156728 ACTIVE

(8) Bridge Deck Rehabilitation - Methods and Materials. To develop methods of determining bridge deck deterioration, the selection of most economically feasible repair methods, and determine efficacy of commercial products. P.M. Ward. HRIS 40-105630 COMPLETE

(9) Implementation of Oklahoma Soils Study for Drilled Shaft Design Method. To determine the shear strength and compressibility of foundation soils for drilled shaft design. M.D. Rayburn. HRIS 62-082454 ACTIVE

(10) Noise Measurement. To validate the noise prediction model used by the Department and forthcoming models made available. E.B. Kidd, II, C.J. Hayes. HRIS 17-156739 ACTIVE

(11) Weighing Vehicles in Motion. To establish the relationship between dynamic weight of vehicles as measured by the Rainhart Model 880 Wheel Load Transducers and the static weight, and the effects of speed, vehicle type, surface roughness and pavement type. J.A. Schmidt. HRIS 55-107292 COMPLETE

(12) Stabilization of Oklahoma Soils with Hydrated Calcitic Lime. An evaluation of the effects of time and weather an engineering properties of soil-lime mixtures. G. L. Hamacher. HRIS 62-156743 ACTIVE

(13) Bearing Capacity and Characteristics of Compressible Clayey and Silty Foundation Soils. Testing of these soil types for characteristics of compressibility, cohesion, and internal friction angle. C.J. Hayes. HRIS 62-082449 ACTIVE

(14) Slope Stability of Certain Selected Colluvial Soils. To rate the degree of stability of colluvial soils according to the degree of hazard so that such stability problems as landslides can be anticipated. C. J. Hayes. HRIS 63-110069 COMPLETE

(15) Shrink and Swell of Excavated Earth Materials. To classify rock types and soils according to the degree of shrinkage or swell encountered when placing the material in embankments. C.J. Hayes. HRIS 63-082456 ACTIVE

36. OHLAHOMA (contd)

b. Oklahoma Highway Safety Office. Jim Thorpe Building. 2101 North Lincoln Street. Oklahoma City. 73105

(1) Fatal Accident Reduction System--Formerly Fatality Analysis File. To establish a 100 percent sample of all fatal accidents as a part of the National FARS. P. Black. HRIS 51-156732 ACTIVE

c. Oklahoma State University: Stillwater. 74074

(1) Feasibility of Various Modes of Passenger Transportation in Rural Areas. To develop a conceptual and operational framework to analyze alternative transportation systems in rural areas. G. Doeksen. HRIS 12-195931 ACTIVE

(2) System Analysis of the Economics of Grain Marketing. To investigate the operations of marketing systems as they affect economics of physical distribution and processing and managerial decision-making by marketing firms. R. L. Oehrtman. HRIS 15-083543 ACTIVE

(3) Feasibility Evaluation of the Implementation of Concrete Polymers for Bridge Deck Applications. To provide specifications and information necessary for utilization of polymers with concrete in deck repair and rehabilitation. Locke. HRIS 34-193005 ACTIVE

(4) Energy Conversion, Energy Storage and Reconversion. To develop a family of systems for storing electrical energy and later reutilizing the stored energy. W. L. Hughes. H.J. Allison. R. Ramakumar. D.D. Lingelbach. HRIS 53-135723 ACTIVE

d. University of Oklahoma: Norman. 73069

(1) Related Studies to Cathodic Protection of Reinforced Concrete Structures. To improve the system for cathodic protection of concrete structures. Locke. HRIS40-156740 ACTIVE

(2) Development of a Disposable Breath Tester and Breath Collection Device. To develop this device that will serve as a screening tester. and also as an evidential tester according to DOT standards. K. M. Dubowski. HRIS 51-177872 ACTIVE

g. Phillips Petroleum Company: Bartlesville. 74004

(1) Environmental Conservation. Environmental studies such as development of improved unleaded gasoline. desulfurization. pollutant emissions controls. etc. C.F. Cook. HRIS 17-110690 ACTIVE

(2) Solution-Polymerized Rubbers in Asphalt. To evaluate these materials as additives to asphalt at levels of 2 to 20 for use in seal coatings and as binders for asphaltic concrete. F. B. Jones. C.R. Bresson. HRIS 31-082457 ACTIVE

(3) Fuels and Lubricants from Petroleum. To develop processes for improving the quality and emissions characteristics of automotive and burner fuels. C. F. Cook HRIS 34-156734. ACTIVE

h. Public Service Corporation of Oklahoma: P.O. Box 201. Tulsa. 74102

(1) Electric Vehicle Research and Development. To encourage the development and usage of electric passenger vehicles. S. Broach. HRIS 53-177873 ACTIVE

37. OREGON

a. Oregon Department of Transportation. Highway Division: 140 Highway Building. Salem. 97310

(1) Evaluation of Truck Escape Ramp Characteristics. To determine the stopping characteristics of trucks in the 18 inch deep bed of 3/4 to 1/2 inch gravel. J.C. Jenkins. G.W. Beecroft. W.J. Quinn. HRIS 21-177874 ACTIVE

(2) Correlation of Layered Theory with Stabilometer Method of Pavement Design. To evaluate the appropriate limiting values of stress, strain, and deformation of pavement components as assessed by the layered theory program. using the Hveem Stabilometer method of mix design. J.S. Eyman. G.W. Beecroft. HRIS 24-101457 INACTIVE

(3) Patching and Grouting Materials for Portland Cement Concrete. To evaluate patching and grouting materials considered suitable for repair of pavements and deck defects of bridges. J.C. Jenkins. C.R. Chandler. G.W. Beecroft. HRIS 34-082462 ACTIVE

(4) Corrugated Metal Pipe Comparison Study (Service Life and Condition Survey of Corrugated Metal Culverts). To establish criteria to aid in selecting best type of metal culvert for a given site with respect to abrasion and corrosion. F. E. Terpin. HRIS 34-101076 (Citations) COMPLETE

(5) Development of a Pavement Management System. To develop a system for Oregon that will provide longer life and optimize choices of alternative treatments. G. Beecroft. HRIS 40-156746 ACTIVE

(6) Variable Message Fog Hazard Warning-Sign to Control Vehicle Operating Characteristics. To show that warning displayed on a remotely controlled variable-message sign can adjust traffic flow on freeways. L.E. George. D.R. Wagner, D. K. Hofstetter. HRIS 54-020272 (Citations) ACTIVE

(7) Modulus Values for Subgrade Materials. To evaluate the supporting capacity of various resilient subgrade soils and devise design methods for pavements thereon. Gregg. HRIS 61-193009 ACTIVE

e. Oregon State University: Corvallis. 97331

(1) An Air Quality Model of Agricultural Field Burning in Oregon's Willamette Valley. To implement the Livermore Radiation Laboratory Pollution Model within the Valley and the Northwest region of the State. and evaluate comparative effectiveness of alternative control strategies. W. Hewson. C. Craig. R. Boubel. D. Chilcote. R. Layton. HRIS 17-156744 ACTIVE

(2) Stream Ecology and Diversity Studies. A study of the biology of stream salmonids in their habitats. determining influence of stream alterations on fish resources. J. D.McIntyre , C.B. Schreck. HRIS 23-156755 ACTIVE

(3) Development of Improved Methods for Incorporation Regional Effects in Pavement Thickness Design. To establish criteria for incorporating regional factors and structural numbers in design of pavements. R.G. Hicks. HRIS 24-177876 ACTIVE

(4) Controlling Biological Deterioration of Wood with Volatile Chemicals. Study of various chemicals for treating wood used in highway and other structures. R.D. Graham. M. E. Corden. T.C. Scheffer. HRIS 40-105634 (Citations) ACTIVE

(5) Development of a Priority System for Highway Safety Improvements. To develop procedures for locating and rating hazardous conditions and then developing a rating system to establish priorities for improvements. R.D. Layton. HRIS 51-177875 ACTIVE

37. OREGON (contd)

e. (6) Oregon County Road Administration and the Law. To identify. evaluate and recommend changes in laws relating to country road administration. M. Westling. HRIS 70-193010 ACTIVE

h. Portland State University: Portland. 97207

(1) Structural Model Investigation of Orthotropic Bridge Decks. To develop scale models for continuous orthotropic bridge decks over floor beams: verify present discrete computer analysis. and document reliability of such models for long span structures. H. Erzurumlu. W. Berry. HRIS 25-102977 (Citations) ACTIVE

i. Oregon Traffic Safety Commission: Corvallis. 97331

(1) Development of Priority System for Highway Safety Improvement. To develop procedures for locating and rating hazardous conditions and then developing a rating system to establish priorities for improvements. R.D. Layton. R.G. Hicks. F. Iranitalab. HRIS 51-156747 ACTIVE

j. Oregon Association of Counties: Salem. 97310

(1) County Road Administration and the Law. To analyze pertinent provisions of state and federal law to county road administrators and prepare guide for administrators on state and federal requirements and procedures affecting county roads. Westling. HRIS 70-193007 ACTIVE

38. PENNSYLVANIA

a. Pennsylvania Department of Transportation: P.O. Box 2926. Harrisburg. 17120

(1) Paddle Type Glare Screen. Evaluation of the merits and performance of the paddle-type glare screen. R. J. Brunner. HRIS 21-177891 ACTIVE

(2) Increased Height of Deer Fence. To test the ability of a 9-foot fence in wooded and agricultural areas to control deer movement. T.H. Nichols. HRIS 21-100792 ACTIVE

(3) Dynamic Pile Testing for Determining Pile Stresses during Driving. To provide an alternative dependable method of determining static load of piles that would be less costly and time consuming. S.R. Simco. HRIS 21-156762 ACTIVE

(4) Pavement Base Drain Evaluation. To evaluate the pavement base drain and compare its performance with the pipe foundation type. C. Churilla. G. Hoffman. HRIS 22-193031 ACTIVE

(5) Continuously Reinforced Concrete Pavement Overlay. An evaluation of this method its long range performance and potential benefits. T.H. Nichols. R.J. Brunner. HRIS 24-082504 ACTIVE

(6) Post-Tensioned Concrete Pavement. An evaluation of the immediate and long-range performance of an experimental post-tensioned slab. R.J. Brunner. HRIS 24-101488 ACTIVE

(7) Plain Cement Concrete Pavement. Evaluation of a 7-inch unreinforced. undoweled pavement on 4 inches of aggregate cement subbase versus a standard flexible 2 1/2 inch bituminous concrete on 5 inches of base and 6 inches of subbase. HRIS 24-100737 ACTIVE

(8) Open-graded Asphalt Friction Course. To measure the effect of this course as an improved skid resistant pavement. R.J. Brunner. HRIS 24-082496 ACTIVE

(9) Iterim Corrective Skid Resistance Treatments on I-83. An evaluation of an interim corrective treatment. R. Snyder. HRIS 24- 156774 ACTIVE

38. PENNSYLVANIA (contd)

a (10) Skid Test Strips with No. 2 Blended "H" Aggregates. To evaluate the performance of larger size "H" aggregates when blended with smaller one-half inch "L" aggregates. D. Mellott. HRIS 24-156793 ACTIVE

(11) Skid Resistance Treatments on Interstate 80. To evaluate three corrective skid resistance treatments. (longitudinal grooving, bituminous slurry seal and open-graded asphalt friction course). D. B. Mellott. R.J. Brunner. HRIS 24-135792 ACTIVE

(12) SEALINSERT Pavement Joint System. To evaluate the placement and performance characteristics of this material, a combination insert and neoprene sealant. R. Snyder. HRIS 24-156791 ACTIVE

(13) Full Depth Asphalt Pavement. Comparison of full-depth pavement immediate and long-range performance with conventional flexible pavement design. HRIS 24-101454 ACTIVE

(14) Experimental Black Base Construction. An evaluation of four experimental black base pavements and comparison with the standard crushed stone base course. T. H. Nichols. HRIS 24-101950 ACTIVE

(15) Concrete Paved Shoulders. Evaluation of performance and economics of concrete paved shoulders, 6-inch thickness, unreinforced, and jointed every 15 1/2 feet, with tie bars to the pavement. T.H. Nichols. HRIS 24-101455 ACTIVE

(16) Carbon Black in Bituminous Wearing Courses for Crack Reduction. To evaluate the ability of carbon black in asphalt to reduce reflective cracking. D.B. Mellott. HRIS 24-193026 ACTIVE

(17) Wire Reinforced Concrete. Evaluation of a high-early strength steel fiber reinforced concrete wearing surface 2 inches thick on an existing bridge deck. HRIS 25-102834 ACTIVE

(18) Wax Bead Impregnated Concrete for Bridge Decks. A cost and performance evaluation of using wax beads in concrete mixes as a means of combating corrosion of steel rebars. R.J. Brunner. HRIS 25-156800 ACTIVE

(19) Stainless Steel Rebars for Bridge Deck Construction. To evaluate the use of these rebars, considering placement, handling characteristics, and effectiveness in preventing corrosion. R.H. Brunner. HRIS 25-135793 ACTIVE

(20) Low-Slump, Dense Concrete Wearing Surface for Bridge Decks. To evaluate this type of concrete as an alternative to latex-modified concrete as to performance, durability and cost effectiveness. W. Warfel. HRIS 25-156776 FUTURE

(21) Performance Monitoring of a Tieback Wall. Study of the behavior of the tieback soil-wall system and refine a computer program to correspond with field measurements. U. Dash. J. DeRoss. HRIS 25-156781 ACTIVE

(22) Load History and its Effects in Highway Bridges. To determine load history and relate that history to life expectancy to similar bridges. I. Januaschek. HRIS 25-082479 ACTIVE

(23) Cathodic Protection of Bridge Decks. To evaluate the installation techniques of a cathodic protecting system and investigate performance of the bridge deck after the system is in service. R.J. Brunner. HRIS 25-135765 ACTIVE

(24) Polyester Fiber Reinforced Cold Patch Material. An evaluation of the effectiveness of polyester fibers on bituminous cold patch to improve workability and durability. D. B. Mellott. A. Truax. HRIS 31-193032 ACTIVE

38. PENNSYLVANIA (contd)

a. (25) Trinidad Asphalt in Moto-Paver Mixes. To evaluate the effectiveness of a blend of Trinidad Lake asphalt and conventional asphalts in improving performance and durability of mixes placed through a moto-paver. D.B. Mellott. HRIS 31-193036 ACTIVE

(26) Trinidad Lake Asphalt in ID-2 Bituminous Wearing Course. To evaluate the mixing and placing characteristics and field service performance of a blend of Trinidad Lake asphalt in AC-20. and compared with conventional pavements. D.B. Mellott. HRIS 31-193035 ACTIVE

(27) Mastic Asphalt Concrete (Gussasphalt). An evaluation of mixing and placing of this material. its immediate and long range performance and its cost performance as compared to conventional high-type bituminous concrete. D.B. Mellott. HRIS 31-103624 ACTIVE

(28) Evaluation of Special AC-20 Asphalt. To evaluate the service performance of ID-2 bituminous wearing coarses one and one-half inch thick. using two asphalts with distinctly different penetration and viscosity properties. D.B. Mellott. HRIS 31-193028 ACTIVE

(29) Durability Study of Viscosity Graded AC-20 Asphalt Cements in Pennsylvania. A study of changing properties in pavements in service. effect of low temperature rheological properties on performance and durability and establish limits for viscosity and ductility for specification purposes. Kandhal. R. Basso. HRIS 31-156761 ACTIVE

(30) Asbestos Fibers in Bituminous Concrete Surfaces. Evaluate the benfits of using these fibers in bituminous concrete to reduce reflection cracking, minimize rutting and to improve durability. D.N. Mellott. T.H. Nichols. HRIS 31-103604 ACTIVE

(31) Latex-Modified Concrete for Bridge Deck Construction. To evaluate the construction and long-term performance of latex-modified concrete overlays. R.R. Snyder. HRIS 32-102992 ACTIVE

(32) Polyvinylchloride Joint Sealant (NEA 444). To evaluate performance of an elastomeric. polyvinylchloride. polymer-type joint sealant in new concrete pavement. R.J. Brunner. D. B. Mellott. HRIS 33-135784 ACTIVE

(33) Machine Insertion of Dowel Bars in Reinforced Concrete Pavement. Evaluation of field handling of machine-inserted dowel bars and determine improvements imparted to transverse joint performance. T.H. Nichols. HRIS 33-193030 ACTIVE

(34) Reflective and Non-reflective Sheeting for Overhead Signs. Evaluation of the feasibility of reflective sheeting as background for overhead signs without external illumination. Bortree. HRIS 34-156786 COMPLETE

(35) Prairie Film Slurry Grit System. Evaluation of performance and durability of a colored aggregate-resin system for surface course use. for roadway delineation. and medial and walkway surfaces. R.R. Snyder. HRIS 34-192033 ACTIVE

(36) Polyester Fibers for Asphaltic Pavement Reinforcement. Evaluate effectiveness of these fibers in hot bituminous mixtures in reducing transmittal of reflection cracks R. Brunner. HRIS 34-177892 ACTIVE

(37) Alternate Latex Modifiers. Evaluation of effectiveness and performance of latex modifiers other than Dow. in concrete overlays on bridge decks. R.R. Snyder. HRIS 34-193024 ACTIVE

(38) Galvanized Bridge Deck Reinforcing Steel. To evaluate the effectiveness of this steel in reducing corrosion. R.R. Snyder. HRIS 34-102994 ACTIVE

38. PENNSYLVANIA (contd)

a. (39) Zinc-Rich Paint System. A performance and durability evaluation of this system as compared with a conventional paint system. R.J. Brunner. HRIS 34-135801 — ACTIVE

(40) Waterproofing Membranes for Bridge Decks. Evaluation of the ability of six different types of membrane to waterproof bridge decks and protect against intrusion of water and chlorides. R.R. Snyder. HRIS 34-102993 — ACTIVE

(41) Use of Filter Cloths for Sub-surface Drainage Systems for Highways. To evaluate several types of filter cloths for this purpose. A.D. Forshey. HRIS 34-156798 — ACTIVE

(42) Rubber-Asphalt Binder for Seal Coat Construction. Evaluation of a reclaimed rubber-asphalt mixture for surface treatment applications. D.B. Mellott. R.J. Brunner. HRIS 34-082493 (Citations) — COMPLETE

(43) Field Evaluation of the Gamma Scientific Model 910 Retroreflectometer. To develop a practical means of field testing the reflective sheeting material used on roadway signs. F. O'Black. HRIS 34-177890 — ACTIVE

(44) Epoxy Coated Steel. Study of the use of steel rebars coated electrostatically with a powdered epoxy resin in bridge decks. R.R. Snyder. HRIS 34-102995 — ACTIVE

(45) Anthracite Mine Refuse in Bituminous Concrete. Evaluation of the use of unburned mine waste in bituminous concrete wearing surfaces, using conventional equipment, with emphasis on skid resistance. D.B. Mellott. HRIS 34-101976 — COMPLETE

(46) Acoustic Crack Detection -- Magnetic Crack Definer: Field Evaluation. A study and evaluation of the use of these instruments in bridge inspections. I. Janauschik HRIS 41-082505 — ACTIVE

(47) Implementation and Operation of Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program and a means of evaluating that program. HRIS 51-048533 — ACTIVE

(48) Identification and Surveillance of Accident Locations and On-site Investigations of Accidents. HRIS 51-106222 — ACTIVE

(49) Fog Detection and Warning System. To evaluate the effectiveness of a proposed system in reducing speed during fog conditions, and thus reducing accident potential. W. Earfel. HRIS 54-135779 — ACTIVE

(50) Reinforced Earth Wall Evaluation. To verify through instrumentation and field testing the design method for these walls. U. Dash. N. Hawks. HRIS 63-177894 — ACTIVE

(51) Earth Pressures Behind a Counterfort Abutment Wall. To measure earth pressures behind a 45-foot high rigid concrete retaining wall with a granular backfill. C. Churilla. J. Diviney. HRIS 63-156753 — ACTIVE

(52) Freezing Indexes and Regional Climates. To develop a method of predicting the freeze index land frost depth penetration of localities remote from weather stations. Cumberledge. Hoffman. HRIS 64-020273 — ACTIVE

(53) Fundamentals of Frost Action in Subgrade Soils. Develop and evaluate apparatus and procedures for measuring permeability of soils as a function of soil suction, degree of saturation, or both. Cumberledge. Hoffman. HRIS 64-110361 — ACTIVE

b. Bucknell University: Lewisburg. 17837

(1) Deicing Salt Transport in Stream Systems. A comparison of salt applied to highways with that carried by draining stream systems. L.M. Younkin. HRIS 22-135771 (Citations) — COMPLETE

38. PENNSYLVANIA (contd)

b. (2) Effect of Pile Cap on Lateral Capacity of Pile Groups. To determine the effect of soil beneath the pile cap on the lateral capacity of pile groups, and revise the proposed method of analysis accordingly. Kim. HRIS 25-103025 ACTIVE

e. Lehigh University: Bethlehem, 18015

(1) Optimal Dimensions for Inlet Gratings. To determine the most efficient lengths of standard diagonal-bar inlet gratings of 3-foot width on paved highway and 4-foot width in grassed drainage channels. A.W. Brune. HRIS 22-082482 ACTIVE

(2) Study of Blue Route Bridge Defects and Structural Response. Detailed metallographic and fractographic studies of defects in sample cores, stress history study, etc. J. W. Fisher. HRIS 25-193023 FUTURE

(3) Prestress Losses of Post-Tensioned Members. To extend a previously developed procedure for prestress loss estimation to post-tensioned and pre-post tensioned structural members. T. Huang, P. Rimbos, C.S. Hsieh, B. Hoffman. HRIS 25-082491 (Citations) ACTIVE

(4) The Overloading of Steel Highway Bridges. To develop a computer based analysis scheme to predict overload response of steel girder-reinforced concrete deck bridges. C.N. Kostem. HRIS 25-177882 ACTIVE

(5) Determination of Cracking in Electroslag Welds at Meadville. To evaluate the susceptibility of electroslag weldments to fatigue crack growth and brittle fracture. J.W. Fisher. HRIS 25-193019 FUTURE

(6) Development and Refinement of Load Distribution Provisions for Prestressed Concrete Beam-Slab Bridges. To develop specification for prestressed concrete I-beam superstructures with provision for skew in I-beam and spread box beam types, and investigate possibility of developing provisions covering effect of interior span diaphrams, etc. D.A. Van Horn, C.N. Kostem. HRIS 25-102899 ACTIVE

(7) Evaluation of Prestress Loss Characteristics of In-service Bridge Beams. To measure prestress losses of in-service pretensioned bridge members on an experimental bridge. T. Huang, C.S. Hsieh. HRIS 25-102849 (Citations) ACTIVE

(8) High Cycle Fatigue of Welded Bridge Details. Study of fatigue cracks in bridges resulting from extremely high volumes of truck traffic which constitute large numbers of load applications at low stress levels, using 100 million cycles in the laboratory testing of specimens, as well as an extensive field study of bridges experiencing fatigue damage. J.W. Fisher, B.T. Yen, J.H. Daniels, H. Woodward, G.J. Inukai. HRIS 25-102900 (Citations) ACTIVE

(9) Implementation of Program BOVA. A computer based modification of the Bridge Overload Analysis program to permit simplified input by semi-skilled personnel. C.N. Kostem. HRIS 25-177881 ACTIVE

f. Pennsylvania State University: University Park, 16802

(1) Transportation Technical Assistance to the Area Agencies on Aging in Pennsylvania. Formation of a Technical Assistance Team to advise area agencies on problems of transportation for the elderly and disadvantaged. J.H. Miller. HRIS 11-177902 (Citations) ACTIVE

(2) Factors Affecting the Economic Development of Rural Communities. To develop a model for commuting pattern prediction. J. D. Jansma, F.M. Goode. HRIS 12-195917 (Citations) ACTIVE

38. PENNSYLVANIA (contd)

f. (3) Fugitive Dust Emissions from Vehicles on Paved Roads. To study generation and atmospheric dispersion of dust generated by automotive vehicles traveling on paved roads. R. J. Heinsohn. HRIS 17-135747 ACTIVE

(4) Fugitive Dust from Vehicles Traveling on Unpaved Roads. To develop a vehicle for surveying fugitive dust, devise a plan to survey road routinely, and analyze dust and identify types of particulates. R.J. Heinsohn, C. Birnie, T. Cuscino. HRIS 17-193041 ACTIVE

(5) Development of a Flood Potential Index Map for Pennsylvania Watersheds. To produce a flood potential map for watersheds up to 250 square miles in area. G. Aron, D. F. Kibler. HRIS 22-177897 ACTIVE

(6) Development of a Revised Procedure for Estimating design Floods from Ungaged Watersheds. To revise the flood estimating procedures developed in 1971 to include all data up to 1977, compute flood frequency statistics and effects on reservoir urbanization, glaciated soils, limestone and wooded area. Aron. HRIS 22-177898 ACTIVE

(7) Optimal Antecedent Precipitation Index for Small Eastern Watersheds. To determine which schemes for combining rainfall and climatic observations preceding a storm are most strongly related to the ensuing flood response. B.M. Reich, T.M. Rachford. HRIS 22-101012 (Citations) COMPLETE

(8) Implementation of a Rating Procedure for Pavement Surface Roughness. Develop a simple survey profilometer with continuous recording of relative vertical motions and vehicle acceleration for measuring road roughness. Park. HRIS 24-156772 ACTIVE

(9) Pavement Macrotexture Parameters Obtained from Profiles. To develop methods to reduce pavement profiles to a set of parameters adequate to describe pavement macrostructure. J.J. Henry, R. W. Flaccus. HRIS 24-102024 (Citations) ACTIVE

(10) Deep Sealing of Concrete Bridge Deck with Linseed Oil and Related Compounds. Study of means of deep sealing concrete pavements with optimal impregnation of up to 2 1/2 inches and evaluate protection against corrosion from water and deicing salts. P. D. Cady, D.E. Kline, P.R. Blankenhorn. HRIS 24-135770 (Citations) COMPLETE

(11) Pavement Texture Measurement Using Tire Noise. To determine if there is a relationship between noise characteristics and pavement texture. J. J. Henry. HRIS 24-102061 (Citations) ACTIVE

(12) Seasonal Skid Resistance Variations. To develop a methodology for predicting from skid measurements made at any time of year the lowest value a well established pavement will attain during the same year. Henry. HRIS 24-156792 (Citations) ACTIVE

(13) The Relationship of Locked Wheel Friction to that of Other Test Modes. To determine whether any advantage can be gained by converting existing skid resistant survey methods from the locked-wheel method. W.E. Meyer, J.J. Henry. HRIS 24-102071 (Citations) ACTIVE

(14) A Study of Flexible Pavement Base Courses and Overlay Designs: Second Cycle of Research at the Pennsylvania Transportation Research Facility. To determine the 18 kip single axle equivalency factors for heavily loaded triaxle vehicles and validate the overlay design procedures now in use. T.D. Larson, M.C. Wang. HRIS 24-135794 ACTIVE

(15) An Experimental Segmental Bridge. Field studies of the behavior of a full scale segmental bridge, with evaluations during all stages of the construction and testing phases. R.M. McClure. HRIS 25-156767 ACTIVE

38. PENNSYLVANIA (contd)

f. (16) Borehole Cements for Radioactive Waste Isolation. To optimize cements so that the hydrated cementitious materials having properties required for borehole plugging can be emplaced by feasible technology, be stable in long time frame important for radioactive waste isolation, have low porosity and very low permeability, etc. D. M. Roy, W. B. White HRIS 32-177896 (Citations) ACTIVE

(17) High Temperature Cements for Geothermal Wells. To develop new cements capable of being used at temperatures up to 400 degrees C. D.M. Roy. HRIS 32-177900 ACTIVE

(18) Processes Taking Place in Cement Hydration. To identify factors responsible for generation of high strength in cement paste. D.M. Roy. HRIS 32-083023 ACTIVE

(19) The Role of Fluxes and Mineralizers in Lowering Cement Kiln Temperatures. Study of the fluxing effect of mineralizers added to typical clinker compositions to increase the efficiency of burning, with further investigations in the lower temperature regions. D. M. Roy. HRIS 32-177901 ACTIVE

(20) Ultra High Strength Generation in Cement and Concrete. A continuation of earlier studies on means for developing higher strength generations in cement paste and concrete. D. M. Roy, A. R. Bobrowsky, H. E. Shull. HRIS 32-104353 COMPLETE

(21) Adjusted Price Systems in Restricted Performance Specifications. To summarize general theory of the concept, review current practice regarding implementation, and recommend a rational adjusted price system for bituminous concrete specifications. J. H. Willenbrock. HRIS 33-135760 (Citations) ACTIVE

(22) Development of Acceptance Plans for Bituminous Concrete Airport Pavements. To develop a statistically based, price adjustment acceptance plan for these pavements. J. L. Burati, J. Willenbrock. HRIS 33-193038 ACTIVE

(23) Predicting Sediment Flow from Proposed Highway Construction Projects. To develop a procedure for prediction of sediment erosion from construction sites. Miller. HRIS 33-156782 ACTIVE

(24) Advanced Technology Materials Applied to Guideway, Highways and Airport Runways. To demonstrate the potential of advanced technology in the use of ceramic materials in high usage vehicular traffic areas. D.M. Roy, P.D. Cady, W.E. Meyer, H.E. Shull. HRIS 34-045961 (Citations) COMPLETE

(25) Transportation Energy Conservation - Energy Implications of Automobile to Transit Mode Shifts. To generate a planning model which predicts fuel expenditures for various configurations of urban travel demand. R.E. Carrier. HRIS 13-135758 COMPLETE

(26) Control of Deer on Highway Rights-of-Way. To determine if plywood models of deer will prevent deer from moving onto highway rights-of-way. E.D. Bellis. HRIS 51-135769 COMPLETE

(27) Investigation of the Transient Aspect of Hydroplaning. To develop experimental and analytical techniques to determine transient phenomena during transition from partial to total hydroplaning. J.J. Henry, S.K. Agrawal. HRIS 53-156775 ACTIVE

(28) Second Generation Catalysts for Automobile Pollution Abatement. To develop improved materials for catalysts for controlling automotive exhaust pollutants. R.L. Kabul, G.J. McCarthy. HRIS 53-135755 ACTIVE

(29) Amelioration of Night Myopia While Driving. To determine if night myopia in night driving can be ameliorated by additional negative correction compensating for this phenomena. H.W. Leibowitz, D.A. Owens. HRIS 52-135762 (Citations) ACTIVE

38. PENNSYLVANIA (contd)

f. (30) Bibliographic Search and Abstracting in the Field of Urban Transportation. To review all relevant literature and abstract the most important documents. F. A. Haight. HRIS 90-177895 COMPLETE

g. University of Pennsylvania: Philadelphia, 19104

(1) Laboratory Testing of Predictive Models. To improve the existing Integrated Transportation and Land Use Model (ITLUP) previously developed, for use in testing the impact of policy options in urban transportation. S.H. Putnam. HRIS 12-179339 ACTIVE

(2) Transport of Solid Commodities via Freight Pipelines. A feasibility study of the viability of the freight pipeline as an effective mode of long distance transportation and evaluation of the issues. I. Zandi. HRIS 15-058489 (Citations) ACTIVE

h. University of Pittsburgh: Pittsburgh. 15213

(1) Optimal Estimation and Control of Dynamic Systems. To investigate the basic mathematical theory and its application to digital simulation of demand actuated systems. W. G. Vogt. HRIS 12-135750 ACTIVE

(2) Comparison of Demand Activated and Fixed Route Transportation Systems. To modify an existing computer simulation model of a Dial-a-Ride system to enable operation of the model in a demonstration project. W. G. Vogt. HRIS 12-038982 ACTIVE

i. Villanova University: Villanova, 19085

(1) Case Studies on Citizen Participation in Transportation Planning. Case studies on several transportation studies analyzed from the standpoint of citizen participation aspects, including highway busways, rail rapid transit, and rail commuter service. J. J. Schuster, J. N. Balog, R. J. Humbert. HRIS 11-156758 (Citations) COMPLETE

k. Aluminum Company of America: 425 Sixth Avenue, Pittsburgh, 15219

(1) Fatigue of Welded Joints in Structural Aluminum. Conducting of tests on joints to establish guidelines for design. G.E. Normark. HRIS 25-102264 ACTIVE

m. Applied Science Associates, Incorporated: P. O. Box 158, Valencia, 16059

(1) Presentence Investigation Training: Material Development and Seminars. To develop a training package designed to aid successful identification of alcohol abusers among those arrested for Driving While Intoxicated. M.W. Nesbitt. HRIS 15-156783 ACTIVE

o. Budd Company, Technical Center, 300 Commerce Drive, Fort Washington. 19034

(1) Lightweight Subcompact Vehicle Side Structure. To make detailed design modification of the side structure of this vehicle so as to improve the side structure intergrity in side impact collisions, and the occupant compartment integrity. HRIS 53-160354 ACTIVE

v. Steel Structure Painting Council: 4400 Fifth Avenue, Pittsburgh. 15213

(1) Performance of Alternate Coatings in the Environment. An evaluation of the durability of newer types of coatings, raw materials, and surface preparation methods. J. D. Keane, J.A. Bruno, R.E. F. Weaver. HRIS 34-105666 ACTIVE

(2) Topcoating of Zinc Rich Paints. To determine generically those combinations of such coatings most and least compatible with the principal types of topcoat systems in a range of environments. J. D. Keane, J. A. Bruno, R.E. F. Weaver, G.D. Walther, E. D. Rossi. HRIS 34-135796 (Citations) ACTIVE

38. PENNSYLVANIA (contd)

v. (3) Specifications for Painting Structural Steel. To prepare specifications for painting structural steel, including preparation, types of paints, and applications methods. J. D. Keane. HRIS 34-104749 (Citations) ACTIVE

(4) Field Test of Bridge Paints. Field evaluations of promising protective painting systems under a wide variety of conditions and locations. J. D. Keane. HRIS 34-102784 ACTIVE

ac. Franklin Institute, Research Laboratories: Benjamin Franklin Parkway, Philadelphia. 19103

(1) Testing Criteria and Techniques of Evaluation for Passenger Pedestrian Oriented Symbols for Use in Transportation-Related Facilities. To develop a method of testing and evaluating the effectiveness of the 33 passenger/pedestrian oriented symbol signs recommend by the American Institute of Graphic Arts for adoption by the U.S. Department of Transportation. M. Freedman. HRIS 51-156794 (Citations) COMPLETE

(2) Review of Pennsylvania Driver Education/Driver Licensing System. To develop a more effective and efficient education and licensing program, based on review of practice in other states. J. Reightker. HRIS 51-156788 (Citations) COMPLETE

(3) Establishment of a National Accident Sampling System (NASS) Team in Delaware County. To establish a team as one of ten units pilot testing the NASS concept. M. Freedman. M. Berkovitz. HRIS 51-193016 ACTIVE

(4) Analytical Evaluation of Vehicle-Based Fog Countermeasures. To determine driver visual requirement for safe driving in fog, effects of fog on visibility, driver behavior under reduced visibility, scope of accident problem in fog. B. W. Koth. HRIS 51-156790 (Citations) COMPLETE

ag. Innovatrix, Inxorporated: Box 371, Ingomar. 15127

(1) Development of Training Package for Driver Licensing Diagnostic and Medical Evaluation. To incorporate into a single package the latest and most effective techniques for detecting driving related physical and mental impairments. A. P. Chenzoff, S.P. Schumacher, L. G. Binstock. HRIS 51-156760 ACTIVE

(2) Training Materials Development: Operation of Emergency Vehicles. To develop an instructional program for use by those providing training in emergency vehicle operation. S. P. Schumaker, A.P. Chenzoff, L.G. Binstock. HRIS 51-156795 ACTIVE

ah. MSA Research Corporation: Evans City. 16033

(1) Fabricate and Demonstrate Systems to Protect Ground Water from Hazardous Material Spills on Land. To develop a system to seal the surface of soils to halt ground water intrusion by land spills of specified hazardous materials. M. Marshall. HRIS 34-177886 ACTIVE

(2) Evaluation Development of Foams for Mitigating Air Pollution from Hazardous Spills. To assess the utility of foams and foam equipment to reduce air pollution from volatile spilled hazardous materials. R. Hiltz. HRIS 34-177885 ACTIVE

ak. Society of Automotive Engineers: 400 Commonwealth Drive, Warrendale. 15096

(1) Categorization and Measurement Standards for Truck and Bus Fuel Economy Improvements. To gather information and recommendations of measurement methods for commercial vehicle fuel economy and how these relate to vehicle productivity. HRIS 53-058398 ACTIVE

38. PENNSYLVANIA (contd)

al. United State Steel Corporation Research Laboratory: 125 Jamison Lane, Monroeville, 15146

(1) Autostress Design of Highway Bridges: Phase 3. To determine plastic-hinge compactness criteria for composite steel beams in negative bending and study the effects of shakedown on behavior of a composite section. P.S. Carskaddan, G. Haaijer. HRIS 25-193046 (Citations) ACTIVE

am. Drexel University: Philadephia, 19104

(1) Technology and Management of Large Scale Programs. Application of the National Space Program managerial and technological methods to other pressing national problems, in particular the problems of the cities. W.W. Hagerty, E.S. Golden, M. Silver, A.J. Pennington. HRIS 11-100107 COMPLETE

(2) A New Method for the Evaluation of Non-quantifiable Environmental Factors for Transportation Planning. A comparison of a new method with other similar methods, with advantages and disadvantages pointed out. S. Popovics. HRIS 17-193277 ACTIVE

(3) Behavior of Buried Conduit Structures Subjected to Seismic Loading. A laboratory investigation of the seismic behavior of such buried conduit structures as pipelines and tunnels. J. Rosenfarb. HRIS 25-177878 ACTIVE

(4) Economical Optimization of Concrete Composition. To provide a method of calculation for concrete proportioning that will allow the most economical composition utilizing locally available materials. S. Popovics. HRIS 32-153428 ACTIVE

(5) Comparison of Method for the Evaluation of the Effect of Compound Composition of Cement Strength Development. A comparison of four methods for evaluation as well as whether C_3A acts as a catalyst on the hydration of calcium silicates. S. Popovics. HRIS 32-193278 ACTIVE

(6) Lightweight Aggregate Concretes for Paving Purposes. To produce a lightweight aggregate concrete that combines economically the high strength, good durability and little maintenance concrete, with high skid resistance, good appearance and reduced tendency to crack. S. Popovics. HRIS 32-153435 COMPLETE

(7) Optimization of Concrete Proportions. To determine the composition of concrete that is optimum from economical or technical point of view, or from both, for a given purpose. S. Popovics. HRIS 32-193276 ACTIVE

(8) Microwave Detection of Subsurface Water and Seepage. An evaluation of the microwave system for locating the water table as well as the seepage paths in unsaturated soils. R. M. Koerner, A. E. Lord, Jr. HRIS 61-193014 (Citations) ACTIVE

(9) Spill Alert Device for Impounded Hazardous Materials. To monitor a number of earth dams as to their stability and safety. R. M. Koerner, A. E. Lord, Jr. HRIS 63-110143 (Citations) ACTIVE

an. RESA - Professional Researchers: 527 North Main Street, Greensburg, 15601

(1) Development of a Customized Inventory Control Program for District Traffic Engineering Materials. To develop a control system that can be computerized for use by non-technical personnel to control ordering and storage of traffic engineering materials. R. E. Stemmler. HRIS 54-156759 COMPLETE

38. PENNSYLVANIA (contd)

ap. North Central Pennsylvania Area Transportation Authority: Ridgeway, 15853

(1) Rural Public Transportation Demonstration Project, Area Transportation Authority of North Central Pennsylvania. To expand the previously developed work and social service transportation services in the area. HRIS 12-177888 ACTIVE

aq. North Central Regional Planning and Development Commission: P. O. Box 155, Harrisburg 17120

(1) Special Highway Planning Assistance Project. To assist in applying the Accelerated Growth Area Concept and process in the North Central area of the State. HRIS 15-177887 ACTIVE

(2) U. S. Steel Plant Impact Area Planning Assistance Proposal. To provide planning assistance to jurisdictions within the immediate defined impact area of the proposed plant. HRIS 15-193025 ACTIVE

ar. Mercer County Regional Planning Commission: P. O. Box 155, Harrisburg, 17120

(1) Special Highway Planning Assistance Project. A comprehensive study of the development problems and potentials associated with the Interstate Route 79 and U. S. Route 62 Interchange in Mercer County. HRIS 15-177884 ACTIVE

as. Pennsylvania State Department of Community Affairs, 19 South 2nd Street, Harrisburg, 17120

(1) Special Highway Planning Assistance Project. To provide short term technical assistance to potential sponsors of development projects. HRIS 11-179578 ACTIVE

39. RHODE ISLAND

a. Rhode Island Department of Transportation: State Office Building, Providence, 02903

(1) Chlorid Inhibitor for Concrete Barriers. To determine relative effectiveness of various coatings as protection against intrusion of moisture and deicing salts into median barriers. R. L. Fruggiero, J. Fera. HRIS 32-156804 ACTIVE

c. University of Rhode Island: Kingston, 02881

(1) Roadside Vegetation Investigations. Study of herbicides, growth retardants, combination of chemicals for vegetation control: management factors of fertilizers, mowing height and frequency; suitability of various materials for stabilizing unproductive soils on road banks. R. C. Wakefield, J. Jagschitz. HRIS 23-138424 (Citations) ACTIVE

40. SOUTH CAROLINA

a. South Carolina Department of Highways and Public Transportation: State Highway Building, Drawer 191, Columbia, 29208

(1) Implementation and Operation of Fatal Accident Reporting System (FARS). To establish a research oriented field in support of the highway safety programs and a means of evaluating those programs. HRIS 51-048541 ACTIVE

(2) In Depth Study of Fatal Traffic Collisions by Multi-Disciplinary Investigation Teams. Investigation teams composed of traffic law enforcement officers, highway engineers, automotive specialists and medical specialists to conduct in-depth examinations of certain fatal accidents within the State. T.M. LeGrand, R. P. Smith. HRIS 51-106260 ACTIVE

40. SOUTH CAROLINA (contd)

a. (3) Safety Teams on Patrol (STOP). To reduce the incidence of alcohol involved traffic collisions on state highways, by concentrating investigative teams on those arrested for driving under the influence of alcohol. L. F. McSwain. HRIS 51-193055 ACTIVE

(4) Selective Traffic Law Enforcement Patrol. The use of specially trained and equipped patrol officers for traffic duty in high-accident areas in order to reduce the accident trend. L. F. McSwain. HRIS 51-156806 ACTIVE

c. Clemson University: Clemson, 29631

(1) Alternative Structures for Increasing Efficiency in Inter-and Intra-Regional Grain Marketing Systems. To increase the economic efficiency of marketing, transporting and processing in marketing institutions, operational structure and policies related to the industry. L. D. Malphrus. HRIS 15-193054 ACTIVE

e. University of South Carolina: Columbia, 29208

(1) Improving the Durability of Plant Mix Asphaltic Surfaces. To investigate materials and specifications and mix design procedures for the purpose of improving durability without sacrificing such other desirable qualities as skid resistance. T.Y. Chu. HRIS 33-103657 ACTIVE

g. E. I. Du Pont de Nemours and Company, Incorporated: Savannah River Laboratory, Aiken, 29801

(1) Design of Containers for Transportation of Nuclear Fuels. Design and test containers for shipping both fresh and spent experimental nuclear fuels and demonstrate impact and fire resistance of such containers. S. F. Petry. HRIS 51-177907 ACTIVE

(2) RRT Fuel Shipments -- Technical Support. Design, analysis and testing of packaging for shipping nuclear fuels and reactor experiments. S. F. Petry. HRIS 51-156805 (Citations) ACTIVE

h. Phillips Fibers Corporation: P. O. Box 66, Greenville, 29602

(1) Fabric Reinforcement of Asphalt Concrete Pavement. Evaluation of the effect of nonwoven polypropylene fabric for pavement reinforcement, using both laboratory and field tests. L. T. Gray. HRIS 31-082453 ACTIVE

41. SOUTH DAKOTA

a. South Dakota Department of Transportation: Transportation Building, Pierre, 57501

(1) Livestock Underpass Usage Study. To determine extent and patterns of use of highway structures and pipes by livestock. D. Anderson. HRIS 21-156810 ACTIVE

(2) Evaluation of In-place Subsurface Drainage Systems in Pierre Shale. To evaluate effectiveness and criteria for placement of subsurface drainage systems. McDonald. HRIS 22-156808 ACTIVE

(3) Test Load - Reinforced Concrete Deck. To obtain greater knowledge of behavior under regular service loads and extreme loads, and perform an analysis of safe-load ratings for this type of bridge. J. Wilsey. HRIS 25-135820 ACTIVE

(4) Evaluation of Effectiveness of In-place Catalytic Blown Asphalt Blanket for Controlling Moisture. To evaluate effectiveness and criteria for placement of this blanket for controlling moisture accumulation in shale subgrades. Hammell. HRIS 31-156807 ACTIVE

(5) Implementation and Operation of Fatality Analysis File. To establish a research oriented file in support of the Alcohol Countermeasures Program and a means of evaluating that program. C. Miller. HRIS 51-038089 ACTIVE

41. SOUTH DAKOTA (contd)

a. (6) Experimental Electronic Method of Measuring Settlements under a High Fill. To evaluate performance characteristics of electronuclear equipment and methods to assess foundation soil settlements in layered strata under high fills. V. Bump. HRIS 63-104987 (Citations) COMPLETE

b. South Dakota School of Mines and Technology: Rapid City, 57701

(1) Investigation of the Basic Forces Involved in the Adhesion of Ice to Highway Surfaces. To obtain a better understanding of the mechanism of adhesion of ice to materials used for highway surfaces. T. Ashworth, J. A. Weyland, V. Ramakrishnan. HRIS 40-193057 (Citations) ACTIVE

c. Rapid City Regional Hospital Incorporated: Rapid City, 57701

(1) Services for Problem Drinking Drivers. D.W. Barkley. HRIS 52-082519 ACTIVE

d. South Dakota State University: Brookings, 57006

(1) A Pilot Study to Investigate Efficient Complementary Transportation and Marketing Systems for South Dakota. Study of current and alternative structures and organizations for the transportation and marketing systems of several major commodity flows. R.K. Rudel. HRIS 15-058834 (Citations) ACTIVE

(2) Impact of Changing Transportation Systems of Grain and Farm Supply Marketing Firms. To estimate quantities of grain to move through elevators and commercial channels in 1980, the demand for feed grain, processed feed and fertilizer, and determine economic feasibility of alternative modes of grain movement. W. F. Payne. HRIS 15-138123 ACTIVE

(3) The Feasibility of Developing Additional Beef Processing Facilities in South Dakota. To determine feasibility of such additional facilities. R.K. Rudel. HRIS 15-083556 ACTIVE

e. University of South Dakota: Vermillion, 57069

(1) A Field Comparison of Standard Emergency-Vehicle Signals with a Sequentially-Fired Flash Tube Array. To determine relative visibility and informational content in field environments of several commonly-used warning and signal systems for these vehicles. J. Berkhout. HRIS 51-058482 (Citations) COMPLETE

(2) Psychophysics of Visual Acuity as a Function of Dynamic Figure/Background Relationships. To study the effect on dynamic visual acuity of background stimulus characteristics such as sharpness of image brightness contrast and relative apparent motion. J. Kerkhout. HRIS 52-177909 ACTIVE

42. TENNESSEE

b. University of Tennessee: Knoxville, 37916

(1) The Use of Non-print Media for Improved Communication of Public Transportation Decision-Making Information. To repackage much of the research information that would be valuable to decision-makers into a format that is pragmatic and effective for their use. R.A. Mundy. HRIS 11-193065 ACTIVE

(2) Evaluation and Development of Layer Coefficients for Flexible Pavement Design. To evaluate the layer coefficients for materials used in Tennessee for flexible pavement design. B.D. Marks. HRIS 24-156924 ACTIVE

42. TENNESSEE (contd)

b. (3) Thermal Movements of Continuous Concrete and Steel Structures. To determine effects of temperature changes on stresses and deformations in long continuous bridges constructed without provision for expansion bearings or joints. E. G. Burdette. HRIS 25-193064 ACTIVE

(4) Loran C Applications Study - Highway Safety. To determine the applicability of this equipment for monitoring police vehicles and for use in highway accident location. F.J. Wegman, A. Chatterjee. HRIS 51-193062 (Citations) ACTIVE

c. Memphis State University: Memphis

(1) Development of Anti-Corrosion and Protective Coatings for Steel Structures. Phase II. Application of a protective coating developed in the laboratory to a bridge that can be observed and evaluated under field conditions. B.T. Bates. HRIS 34-156922 FUTURE

(2) Development of a Traffic Records System for Local Jurisdictions. To develop a manual for use by local jurisdictions for maintaining traffic records, and training local officials in the use of records systems. M. E. Lipinski. HRIS 51-193058 ACTIVE

(3) Aggregate Inventory Petrographic Analysis and Performance Study of Some of Tennessee's Most Quarried Formations. To sample and make petrographic tests of most quarried formations for aggregates used in highway construction. K. M. Hall, R. Lounsbury HRIS 61-156921 ACTIVE

i. Middle Tennessee State University: Murfreesboro, 37132

(1) Development of a Planning Process and Evaluation Procedures for Personnel Training Programs. A review and evaluation of the Tennessee DOT's training and safety programs, policies, procedures and develop measures of effectiveness. F. J. Brewerton. HRIS 11-177912 ACTIVE

j. Cordell Hull Economic Development Corporation: 501 College Street, Lafayette, 37083

(1) Upper Cumberland Regional Transportation Demonstration Program. To provide assistance to the Upper Cumberland Development District in making better use of the many vehicles now available in the District, through better and consolidated management programs. O. Reneau. HRIS 12-177910 ACTIVE

k. Tennessee State Division of Community Development: 500 Deadrick, Nashville, 37219

(1) Continuation for Technical Assistance for Industrial Site Development in the Appalachian Highway Corridors of Tennessee. To work closely with others in the area in providing maximum assistance in development programs, technical assistance in planning and evaluating proposed projects. K. Kelly. HRIS 11-179580 ACTIVE

l. Tennessee State University: 3500 Centennial Boulevard, Nashville, 37203

(1) Evaluation of the Use of Piles in Correction of Landslides. To evaluate the use of piling to correct small slides and to recommend improvements in the procedures and/or use of other methods of slide correction. L. Mishu, R. A. Jones. HRIS 63-156925 ACTIVE

43. TEXAS

a. Texas State Department of Highways and Public Transportation: P.O. Box 5051, Austin, 78763

(1) Equipment for the Measurement of Pavement Performance in Texas. To develop and/or revise equipment to measure pavement deflection, skid resistance, pavement roughness and distress. K. Hankins. HRIS 24-102042 (Citations) COMPLETE

(2) Wheel Load Distribution for Precast Multi-beam Box Girders. To determine the appropriate design wheel load distribution for these beam members of the types used in Texas. J. Panak. HRIS 25-136005 (Citations) COMPLETE

(3) Development of Economical Precast Concrete Bridges. Evaluation of existing and proposed precast superstructure types and develop the most desirable types into useable bridge details. J. J. Panak. HRIS 25-177932 ACTIVE

(4) Evaluation of Overhead Sign Background Material and Mercury Vapor Sign. Evaluation of sign background materials, proposed mercury vapor lighting fixtures, and compare various manufacturers' products. H. D. Jones. HRIS 34-156946 ACTIVE

(5) Equipment for Speed Reduction in Rural Communities. To install and evaluate equipment as to feasibility for reduction of speeds in small rural communities. J. Underwood, A. Luedecke. HRIS 54-193118 ACTIVE

(6) Coordination of Actuated Traffic Signals. Study of the hardware needed to coordinate traffic signals at several intersections and evaluate the performance. C. E. Lee. HRIS 54-177947 ACTIVE

(7) Detrimental Volume Changes of Expansive Clays in Highway Subgrades. To collect data on expansive clays near San Antonio and furnish this data to the Waterways Experiment Station which is making a study for the FHWA. K.H. Hankins, M. L. Steinberg. HRIS 63-135976 COMPLETE

(8) Vehicle Emissions at Intersections. Simulation of intersection traffic and prediction of emissions, and then collecting and analyzing pollutant concentrations and dispersions at intersections. Moe. HRIS 55-193296 ACTIVE

b. Texas Department of Public Safety: 5805 North Lamar Boulevard, Austin, 78773

(1) Speed Control Strategies Evaluation. Development of procedures for increasing the effectiveness of single law enforcement vehicle at controlling traffic speeds. Q. Brackett. HRIS 54-177949 COMPLETE

f. Texas Technical University: Lubbock, 79409

(1) Variation of Urban Runoff with Duration and Intensity of Storms. To determine quality of urban runoff as related to duration and intensity of rainfall, and time since the previous rainfall. D. Wells, R.M. Sweazy, B.J. Claborn. HRIS 22-101025 (Citations) ACTIVE

(2) Studies in Wind Engineering. Evaluation of wind storms as related to window glass breakage, wind resistant construction, storm damage documentation, and wind-structure interaction dynamics. K. C. Mehta, J.E. Minor. HRIS 25-102910 (Citations) ACTIVE

(3) Engineering Aspects of Tornadoes. An evaluation of engineered structures damaged during tornadoes. J.E. Minor, K.C. Mehta, J.R. McDonald. HRIS 25-082530 (Citations) COMPLETE

(4) Dynamic Characteristics of Pneumatic Tires. An investigation of the cross sectional shape as related to cord angle, cord material, pneumatic pressure, rotational speed and load, as well as vibrational characteristics. C.A. Bell. HRIS 54-107275 ACTIVE

43. TEXAS (contd)

g. Texas Transportation Institute, Texas A&M University: College Station, 77843

(1) Priority Use of Transportation Facilities. To assist in the implementation of priority treatment projects on transportation facilities which include both restricted travel lanes and park-and-ride techniques. Holder. HRIS 12-193109 ACTIVE

(2) Increasing Efficiency in the Export Grain Intermodal Transfer System. Study of the role of the truck and the costs involved in the movement of export destined grain. S.W. Fuller, T. Sporleder, R. Owensby. HRIS 15-156955 ACTIVE

(3) Marketing Public and Mass Transportation in Texas: An Evaluation of Service Improvements. To develop guidelines for evaluations and develop a handbook for market research efforts. P.K. Guseman. HRIS 15-177952 ACTIVE

(4) Economics of Highway Design Alternatives. To study procedures for evaluating benefits and costs affecting user and non-users of highway designs. J. L. Buffington, W. F. McFarland HRIS 15-156941 ACTIVE

(5) The Effect of Total Accessibility on Transit in Texas. To evaluate the effect of requiring total accessibility and effect of requiring separate specialized service on transit industry in Texas, as related to the elderly and the handicapped. T. Urbanic. HRIS 15-193098 ACTIVE

(6) Transportation, Population and Economic Growth. To develop information on the relationships between these elements. W. F. McFarland. HRIS 15-156985 ACTIVE

(7) An Analysis and Evaluation of Alternative Futures. A study of the ability of Texas to serve transportation demands under reduced petroleum supplies, as it may be affected by federal actions, and to assess the impact on Texas economy. D. L. Christiansen. HRIS 17-193087 ACTIVE

(8) Flexible Pavement Evaluation and Rehabilitation. To measure performance and cost effectiveness of various methods of construction and rehabilitation of pavements. R.L. Lytton, W. M. Moore. HRIS 24-082547 ACTIVE

(9) Performance of Open Graded Friction Courses. To define the long term performance problems associated with open graded friction courses in order that appropriate design changes can be made. S. C. Britton, B.M. Gallaway. HRIS 24-177939 ACTIVE

(10) The Wet Weather Safety Index. To develop a Wet Weather Safety Idex (WWSI) as an alternative approach to illustrate a way of placing skid numbers (SNs) in the proper perspective with regard to their influence on wet road safety. D. L. Ivey. HRIS 24-156987 (Citations) ACTIVE

(11) Bridge Rail to Contain Heavy Truck and Buses. To develop a simple economical bridge rail which will restrain and redirect heavy trucks and buses, such as a 40,000 pound single or 60,000 pound articulated vehicle at speeds up to 60 mph. T. J. Hirsch, C. R. Buth. HRIS 25-177942 ACTIVE

(12) Determining of Earth Pressures for use in Cantilever Retaining Wall Design. To establish criteria for design. H.M. Coyle, R.E. Bartiskewitz. HRIS 25-177954 ACTIVE

(13) Development of Bridge Rail to Restrain and Redirect Heavy Trucks and Buses. To develop a rail to restrain and redirect heavy trucks and buses, up to 60,000 pounds and at speeds up to 60 mph. Hirsch. HRIS 25-193094 ACTIVE

(14) Economic Asphalt Treated Bases. To provide an economical material to satisfy particular requirement of asphalt base construction. J.W. Button, J.A. Epps. HRIS 31-177955 ACTIVE

43. TEXAS (contd)

g. (15) Extended Asphalt Binder by Use of Sulphur. A field trial evaluation of a sulphur-extended asphalt binder. B. M. Gallaway. HRIS 31-193100 (Citations) ACTIVE

(16) Bridge Slab Concrete Placed Adjacent to Moving Live Loads. A study of the effects on concrete being placed alongside an active bridge lane as part of a bridge widening project. H.L. Furr. HRIS 32-193090 ACTIVE

(17) Camber in Prestressed Concrete Beams. Study of the causes and means of correcting differential camber in prestressed pretensioned concrete bridge beams designed and fabricated to be identical. H.L. Furr, H.L. Jones. HRIS 32-082570 ACTIVE

(18) Fly Ash Experimental Project. To determine optimum utilization of fly ash as a cement replacement in stabilized subgrades, concrete pavement and structural concrete. W. B. Ledbetter, R. E. Long, B. N. Bannister. HRIS 32-193101 ACTIVE

(19) Design of Drilled Shafts to Support Precast Panel Retaining Walls. To develop rational design criteria for these shafts. H. M. Coyle. HRIS 33-156935 ACTIVE

(20) Location of Marginal Flexible Base Materials. To locate sources of marginal material and map the most economically promising deposits. R.L. Lytton. HRIS 35-193104 ACTIVE

(21) Pavement Maintenance Fund Allocations. To identify conditions and trends, determine desirable funding levels, and allocate funds equitably to all districts. R. L. Lytton, J. A. Epps. HRIS 40-193108 ACTIVE

(22) Traffic Management during Urban Freeway Maintenance Operations. Develop guidelines for practical traffic management approaches to maintenance work zones. C. L. Dudek. HRIS 40-177941 ACTIVE

(23) Crash Test of Turned-down Guardrail Terminal Posts. To develop specifications for terminals of w-beam roadside barriers. Hirsch. HRIS 51-193086 ACTIVE

(24) Crash Testing of a Box Beam Guardrail Terminal Section. To evaluate the effectiveness of the North Dakota box beam guardrail terminal section design. E.L. Marquis. HRIS 51-193091 ACTIVE

(25) Safety in Construction and Maintenance Zones. To develop crashworthy, temporary traffic barriers for construction and maintenance zones, evaluate presently used equipment and develop temporary crash cushions. H.E. Ross, T. J. Hirsch. HRIS 51-193110 ACTIVE

(26) Priority Treatment of Narrow Bridges. To refine the Bridge Safety Index and validate the feasibility of using it to select sites for improvement. T.M. Newton. HRIS 51-177838 ACTIVE

(27) Comparative Evaluation of Speed Control Strategies. To study two speed control strategies designed to increase the effectiveness of single police vehicles at controlling traffic speeds. M.L. Edwards, R.Q. Brackett. HRIS 54-156931 (Citations) COMPLETE

(28) Evaluation of Urban Freeway Modifications. To develop and evaluate traffic control systems, operational procedures, and geometric modifications of urban freeways to improve their efficiency and decrease congestion. W. R. McCasland. HRIS 54-156950 ACTIVE

(29) Longitudinal Evaluation of Speed Control Strategies. A long term evaluation of the impact of speed control strategies on accidents, speed parameters, operational expense and ticketing activity. Q. Brackett. HRIS 54-193105 ACTIVE

43. TEXAS (contd)

g. (30) Public Understanding of Traffic Control Devices. To establish a method for determining traffic control devices which are misunderstood or unfamiliar to the driving public, and determine position of drivers who violate specific control devices. P. K. Guseman, R. J. Koppa. HRIS 54-177943 ACTIVE

(31) Traffic Management during Freeway Reconstruction in Rural Work Zone. To develop practical guidelines for traffic management during freeway reconstruction. S. Richards. HRIS 54-193114 ACTIVE

(32) Freeway Modification to Increase Traffic Flow. To develop a state-of-the-practice report of before and after conditions resulting from modifications of freeway surface geometrics. W.R. McCasland. HRIS 55-177953 ACTIVE

(33) Evaluating Urban Freeway Guide Signing. To develop a method for identifying principal urban freeway navigation information needs in signing and markings. C. J. Messer. HRIS 55-156943 ACTIVE

(34) Determination of Earth Pressures for Use in Cantilever Retaining Wall Design. To measure earth pressures on bases of cantilever retaining wall footings and develop guides for estimating earth pressures more accurately for more economical design. Coyle. HRIS 62-193093 ACTIVE

h. University of Texas, Center for Highway Research: Austin, 78712

(1) Effects of Maintenance, Rehabilitation and Operations Cost Escalation on Transit Systems. To develop a quantitative understanding of the cost escalation problem and document its effects on Texas public transportation systems. C.M. Walton. HRIS 12-193129 ACTIVE

(2) Development and Implementation of the Design, Construction and Rehabilitation of Rigid Pavement. To develop and implement the rehabilitation concepts for rigid pavements. B.F. McCullough HRIS 24-193127 ACTIVE

(3) Implementation of Rigid Pavement Overlay and Design System. To implement improved methods of pavement rehabilitation and design. W.R. Hudson, B. F. McCullough. HRIS 24-193131 ACTIVE

(4) Design Criteria for Post-Tensioned Anchorage Zone Bursting Stress. To develop a state-of-the-art report on a systematic literature study of all analytical, experimental and design related papers and reports on anchorage zone stresses for post-tensioned applications. J.E. Breen. HRIS 25-156934 ACTIVE

(5) Design of Slender Nonprismatic or Hollow Bridge Piers or Columns. To develop design procedures for these structures and a computer code to simplify applications. J. E. Breen. HRIS 25-193126 ACTIVE

(6) Evaluation of the Fatigue Life of Structural Steel Bridges. To determine the fatigue life of a series of continuous two-girder bridges in an Interstate interchange in Dallas. K. H. Frank, J. A. Yura. HRIS 25-193130 ACTIVE

(7) Development of Procedures for the Design of Drilled Shaft Foundations for Support of Overhead Signs. An analytical study based on available data of simple drilled shafts subjected to shear and tension and overturning moment. Reese. HRIS 25-193128 ACTIVE

(8) Crack Control on the Side Faces of Deep Concrete Beams. A study of literature on the subject and observations of actual structures that have developed cracks and comparison with similar girders that have not developed cracks. J. Jirsa, J. Breen. HRIS 25-135973 ACTIVE

43. TEXAS (contd)

h. (9) Influence of Casting Position and of Shear on the Strength of Lapped Splices. To determine influence of bar placement during casting and the shear or moment gradient influence on behavior of anchored bars. J. E. Breen, J. O. Jirsa. HRIS 25-177946 ACTIVE

(10) Structural Evaluation of Existing Bridges for Load Rating and Carrying Capacity. Structural evaluation of four widely used bridge classes to determine load ratings and the credibility for establishing or not establishing load restrictions, and a basis for decisions on routings of overweight permit loads. C.P. Johnson, H. Matlock. HRIS 25-156980 ACTIVE

(11) Moisture Effects on Asphalt Mixtures. Study of methods to detect mixtures prone to moisture related problems. T.W. Kennedy, R. B. Machemehl. HRIS 31-193132 ACTIVE

(12) Tensile Characteristics of Highway Pavement Materials. To characterize the fatigue behavior of pavement materials by implementing the indirect tensile test. T. W. Kennedy. HRIS 31-193136 ACTIVE

(13) Stress-Strain Characteristics and Failure Mechanism of Polymer-Impregnated Concrete. To determine the behavior of idealized models and actual specimens of polymer-impregnated concrete subjected to uniaxial compression, indirect tension and biaxial compression. D.W. Fowler, N. J. Carion, D. R. Paul. HRIS 32-179602 ACTIVE

(14) Optimum Reinforcement for Notched Ends of Prestressed Concrete Girders. To determine one or more end block reinforced details easier to build and structurally more efficient than those presently under consideration for use in pretensioned concrete stringers. R. W. Furlong. HRIS 32-135992 ACTIVE

(15) Polymer-Concrete for Concrete Pavement Rehabilitation. Development of procedures to repair transverse and longitudinal cracks, punchouts and spalls on pavements using polymers. D. R. Paul, B. F. McCullough, D. W. Fowler, R.L. Tucker. HRIS 32-193133 ACTIVE

(16) Design and Characterization of Recycled Pavement Mixtures. To assist in the trial use of recycled pavements as a means of conserving energy consumed in making binders such as asphalt cement, T.W. Kennedy. HRIS 33-193125 ACTIVE

(17) Resistance Welding with Homopolar Generators. An evaluation of the applicability of this generator to resistance welding and its potential impact on productivity, economics and work environment. H.G. Rylander. HRIS 33-193134 ACTIVE

(18) Deployment of a Digital Road Profilometer. To assist the department in selecting a replacement for the existing profile measuring hardware with new, up-to-date equipment to provide roughness measurements. W.R. Hudson, C.W. Lee. HRIS 41-193124 ACTIVE

(19) Vehicle Emissions and Fuel Consumption at Intersections. To develop a practical technique for predicting vehicle emissions at intersections. C. E. Lee, R. B. Machemehl, C.M. Walton. HRIS 55-193123 ACTIVE

m. Corpus Christi Department of Planning and Urban Development: P.O. Box 9277, Corpus Christi 78402

(1) Transit Marketing Research Study for Corpus Christi Area. To accurately identify the transit and travel attitudes of Corpus Christi transit market segments and develop a plan considering needs of elderly and handicapped. M. Hughes. HRIS 12-178005 (Citations) ACTIVE

43. TEXAS (contd)

n. City of Dallas: 1500 Marilla, Dallas, 75201

(1) Coordination of Special Transportation Services for the Elderly, Handicapped, and Transportation Disadvantaged Persons in Dallas County. To analyze the transportation needs of Dallas County social service agencies and their clients and develop a plan for transportation services in a more efficient and effective manner. M. Cox. HRIS 12-177917 FUTURE

(2) Dallas Carpool Demonstration Project. To maintain and operate a computerized carpool matching service for the area. HRIS 12-177918 ACTIVE

t. Southwest Research Institute: 8500 Culebra Road, P.O. Drawer 28510, San Antonio, 78284

(1) Residual Waste Products as Additives to Portland Cement. To analyze and evaluate the addition of slags, fly ashes and kiln dust to portland cement by grinding with clinker or blending fine or ground materials. J. E. Funnell. HRIS 32-156976 ACTIVE

(2) Uniform Tire Quality Grading Treadwear Course Monitoring Program. To provide monitoring of treadwear on radial, bias belted and bias tires. HRIS 34-160042 ACTIVE

(3) Durability Demonstration of Systems for Control of Sulfuric Acid. To evaluate the effectiveness of a variety of systems for controlling sulfuric acid emissions from automotive exhaust. K. W. Springer, M. W. Ingalls. HRIS 34-177928 ACTIVE

(4) Investigation of Threaded Fastner Structural Integrity. R. K. Swanson. HRIS 41-156959 ACTIVE

(5) Cost Benefit Analysis and Mini-field Study of Polarized Lighting. To determine state-of-the-art in vehicle headlighting and estimate benefit and costs of polarization. R. H. Hemion, R. W. Hull. HRIS 51-135971 COMPLETE

(6) Multidisciplinary Accident Investigation -- Vehicle Deformation and Injury Scale. To perform on-site, in-depth investigations utilizing the multidisciplinary approach to some 90 to 160 accidents involving at least one vehicle of the last three model years. T. H. Swiercinsky. HRIS 51-024732 ACTIVE

(7) Alcohol Safety Action Project. To seek effective, practical and economical countermeasures to achieve a substantial reduction in number and severity of accidents caused by drinking drivers. T. Hawkins. HRIS 52-045051 COMPLETE

(8) Drug Abuse and Driving Performance. T. Williamson. HRIS 52-1111346 COMPLETE

(9) Epidemiologic Study of the Effect of Exposure to Automobile Traffic on the Blood Lead Levels of Persons in Selected Age Groups. To examine the relationships between traffic densities and ambient air lead, blood lead on exposed populations, soil lead, house dust lead, etc., D.E. Johnson, R.J. Prevost. HRIS 52-135954 ACTIVE

(10) Investigation of Air Cusion Restraint System (ACRS) Accidents. T. Swiercinsky. HRIS 53-156958 ACTIVE

(11) Analysis of Automobile Restraint System Data. Statistical analysis for passenger injury rate and severity in automobiles employing various restraint systems. G. W. Schreyer. HRIS 53-177925 ACTIVE

(12) National Crash Severity Study. A probability analysis of police-reported towaway accidents, to include all accidents involving fatality or overnight hospitalization, with lesser percentages of other towaway accidents. HRIS 53-160177 ACTIVE

43. TEXAS (contd)

t. (13) Characterization of Exhaust Emissions from Baseline and Oxidation Catalyst-Equipped Vehicles Operating. To study vehicle exhaust emissions while the vehicle is operating under malfunction conditions. C.M. Urban, H.E. Dietzmann, C. T. Hare, K. J. Springer. HRIS 53-177924 ACTIVE

(14) Characterization of Emissions from Prototype Motor Vehicles Designed for Low NOx Emissions. To measure a variety of currently nonregulated exhaust emissions from gasoline engines using various catalytic methods to achieve low oxides of nitrogen. S. F. Martin, H. E. Dietzmann, J. K. Springer. HRIS 53-177926 ACTIVE

(15) Field Demonstration of Polarized Lighting. A field demonstration of polarized headlighting to be coordinated with an OECD Committee. R. H. Hemion. HRIS 53-055715 COMPLETE

(16) Injury Assessment of Belted Cadavers. To determine accurate results of impact tests at speeds up to 40 mph barrier equivalent severity. HRIS 53-055761 ACTIVE

(17) Protective System Performance Study using Volunteer Human Subjects, Cadavers, Animals and Dummies. To measure dynamic response when subjects are restrained by advanced or passive belt or inflatable restraint systems and subjected to dynamic deceleration-time simulated crash pulses. HRIS 53-055621 COMPLETE

(18) Performance Tests of Improved Driver Restraint System for Subcompact Cars. HRIS 53-058711 COMPLETE

(19) Characterization of Emissions from Advanced Automotive Power Plant Concepts. To determine emissions of regulated and non-regulated, potentially harmful substances from advanced engine concepts for passenger car power plants. C. T. Hare, K. J. Springer, H. E. Dietzmann. HRIS 53-177927 ACTIVE

(20) Compressional and Shear Wave Geophysical Logging Probe System. S. A. Suhler HRIS 61-156932 ACTIVE

u. Texas A&M University: College Station, 77843

(1) An Assessment of the Transportation Needs of Selected Rural Texas Counties. A study of the transportation systems in a four country area, as to adequacy for the needs of the disadvantaged and the extent to which the community resources can be drawn together in a consolidated system. H.S. Bonner. HRIS 11-193070 ACTIVE

(2) Auto Body Repair. To conduct a course on autobody repair in grades 9 through 12. D. Cowling. HRIS 11-135944 ACTIVE

(3) A Study of the Transportation Needs of Elderly and Handicapped Persons. To identify the location and transportation needs of these persons, develop alternate ways to serve these needs. R. Holder, M. Gunning. HRIS 12-177936 ACTIVE

(4) Economic Impact of Recreation and Tourism. To determine the impact on various elements in the state of tourism and recreational travel, and its significance. B. I. Ingram. HRIS 15-135952 ACTIVE

(5) Evaluation of Alternative Rural Freight Transportation, Storage and Distribution. To estimate rural freight requirements from 1985 to 1990 and the optimal system for taking care of the requirements. S.W. Fuller HRIS 15-156944 ACTIVE

(6) Potential Impacts of Containerization and Intermodal Movements of Agricultural Commodities and Products. To evaluate the potential and impacts of containerization on shippers, carriers and receivers of commodities, resulting from increased use of containerization. J. T. Lamkin, R. M. Owensby. HRIS 15-156972 COMPLETE

43. TEXAS (contd)

u. (7) Increasing Efficiency in the Grain Handling Storage and Transportation System Serving the South Plains. To determine characteristics of the grain handling industry and modes of transportation utilized in alternative grain flows. S. W. Fuller. HRIS 16-138366 (Citations) ACTIVE

(8) Methanol as Motor Fuel. A study of the economics of producing methanol in quantity and introducing it as a motor fuel. W.D. Harris, R.R. Davison. HRIS 17-105135 ACTIVE

(9) Environmental and Safety Aspects of the Use of Sulphur. An evaluation of the environmental hazards of using sulphur in highway pavements and development of guidelines that would preclude adverse effects. L. E. Deuel. HRIS 23-195921 ACTIVE

w. Central Counties for the MH-MR Services: P. O. Box 1025, Temple, 76501

(1) Services to Problem Drinking Drivers. To provide services for alcohol-abusing persons with the intent of curtailing alcohol-related traffic offenses and fatalities and DWI arrests. C. Pierce. HRIS 52-156977 ACTIVE

z. Wilbur Smith and Associates: 2535 West Loop South, Houston, 77027

(1) Short-Range Transit Study. Analysis of all phases of transit operations, evaluation of adequacy of present system, and recommend improvements both operational and capital, to be implemented in the next five years. M. N. Gunning, W. Graham. HRIS 12-135996 COMPLETE

(2) School Safety Study for the City of Corpus Christi. To develop a School Traffic Safety Manual based on study of traffic circulation, capabilities, signing and other related elements in and around schools. M. E. Goolsby, W. Myers. HRIS 51-177922 ACTIVE

(3) Traffic Engineering Survey for the City of Corpus Christi. After review of previous studies, sign and signal installation techniques and existing traffic codes and ordinances recommend improvements in CBD leading to improved traffic circulation. M. E. Goolsby, W. Meyers. HRIS 55-177921 (Citations) ACTIVE

aa. University of Texas: Arlington, 76019

(1) Study of Chemical and Physical Property Changes Caused by Lime Slurry Pressure Injection. To determine the short term and long term changes in these properties of an active clay soil caused by these injections. T. M. Petry. HRIS 62-193135 ACTIVE

ac. Hoffman Information Identification, Incorporated: 2908 Cullenstreet, Fort Worth, 76107

(1) Multi-User Automatic Vehicle Monitoring System. To design and install an automatic vehicle monitoring system on buses in use in Southern California to monitor and control schedule and headway. G. Gruver, C. Freeny. HRIS 55-177920 (Citations) ACTIVE

ad. Rice Center: 9 Greenway Plaza East, Suite 1900, Houston, 77046

(1) Downtown Transfer Facility, Downtown Transit Mall Feasibility Evaluation. An evaluation of four transit mall options developed from earlier studies as to impact parameters, operations, sales, traffic and joint development. D.K. Glunt, C. P. Sharpe. HRIS 12-193072 (Citations) ACTIVE

(2) Update of the Transit Action Program. Based on the best and most current information, to formulate a realistic interim transit plan for the Houston metropolitan area. C. P. Sharpe, C.W. Glenn. HRIS 12-193073 (Citations) ACTIVE

43. TEXAS (contd)

ad. (3) Westheimer Corridor Study. To study the transit needs of the large area in Houston surrounding the heavily developed Westheimer Boulevard, along with a traffic engineering study of the area. C. P. Sharpe, J.D. Carrara, Jr. HRIS 12-193074 (Citations) COMPLETE

(4) Value Capture Policy: A Study of Prototypical Transit Exchange Situations in Houston. To evaluate the desirability/feasibility/impact of a value capture policy across the areas of law, community enhancement and financing. C.P. Sharpe, D. Callies, S. Montgomery. HRIS 14-136004 (Citations) COMPLETE

(5) Implementation of Joint Development/Value Capture Techniques. Investigate and analyze both conventional and innovative JD/VC techniques for funding mass transit that can be made available to local and state governments. C.P. Sharpe. HRIS 14-059892 ACTIVE

(6) Value Capture and Joint Development Opportunities in Los Angeles, Louisville and Chicago. To explore the urban design, legal and real estate finance implications of implementing a value capture policy of joint development around transit stops. C.P. Sharpe, D.L. Callies, R. Wynings. HRIS 14-136003 COMPLETE

(7) Joint Development -- Past, Present and Future. To trace the past history of joint development, as concerns railroad and trolley car contributions to city development, and describe future prospects for joint development as a part of current move towards mass transit implementation. C.P. Sharpe, HRIS 15-135987 ACTIVE

(8) Transit Needs of Other Houston Activity Centers. To plan, develop and implement short and long term solutions to the particular transit needs of four commercial and residential activity centers in the Houston area. C.P. Sharpe, C.W. Glenn. HRIS 16-136002 (Citations) COMPLETE

(9) Downtown People Mover (DPM) Aesthetic and Urban Design Issues. To explore the use of Rice's VISIT (Visual Simulation in Time) System as a predictive and analytical technique for evaluating the visual impact of guideway transit in urban settings. C. P. Sharpe, D. Glunt. HRIS 21-193071 ACTIVE

(10) Flammability Studies and Toxicological Evaluation of Materials used in Transportation Vehicles. A comprehensive approach to the general materials testing problem, leading to the establishment of design criteria and standards which will result in fire-safe vehicles for the future. M. McMillan. HRIS 34-059260 COMPLETE

ae. Frank C. Smith and Associates: 8585 North Stemmons Freeway, Dallas, 75247

(1) New Capability for Movement of People in Cities. To develop advanced transportation systems, designated as Advanced Group Rapid Transit (AGRT) system. HRIS 12-160171 ACTIVE

af. Southwest Econometrics, Incorporated: Austin, 78731

(1) Analyzing the Value of Time Related to Transportation Problems. To develop a concensus value of time for various types of travellers, based on existing studies and updated for price changes as appropriate. HRIS 11-160262 ACTIVE

ag. Brazos County Department of Highways: College Station, 77843

(1) Operational Effects of Driving on Paved Shoulders. To improve safety and capacity of highways by providing effective design guidelines and management strategy for efficiently using and controlling traffic operations on paved shoulders. Fambro. HRIS 54-193066 ACTIVE

43. TEXAS (contd)

ah. Dunegan-Endevco, Endevco Corporation: 505 North Belt Drive, Houston, 77060

(1) Acoustic Emission Monitoring of Electroslag and Butt Welds on Dunbar Bridge. Develop an acoustical system for collecting and analyzing emission data from weldments but which do not accept emissions from noise sources outside of a region of interest. D.A. Tiede, A.A. Pollock. HRIS 34-192539 FUTURE

44. UTAH

a. Utah Department of Transportation: State Office Building, Salt Lake City. 84114

(1) Energy Savings in Utah Through Preventive Pavement Construction. To determine the potential savings through implementation of a preventive pavement construction or rehabilitation program. E.D. Peterson, D. Anderson. HRIS 15-177960 ACTIVE

(2) Energy Savings in Utah Through Increased Truck Productivity. To determine potential energy savings through expanded usage of triple trailer and/or other truck configurations. E. D. Davenport, R. Stewart. HRIS 15-177959 ACTIVE

(3) Economics of Increasing Truck Size and Weight. To assess the impact of future changes in allowing increases in size and weight of trucks. E. D. Davenport, R. Stewart. HRIS 15-177958 ACTIVE

(4) Monitoring WinterPavement Conditions and Wear. An evaluation of effects of studded tires on concrete pavements. M. C. Belangie, D.E. Peterson. HRIS 24-082630 ACTIVE

(5) Establish Acceptable Level of Skid Resistance. B.E. Cruz, D.E. Peterson, W. Shepherd. HRIS 24-082636 ACTIVE

(6) Recycling Highway Materials for Maintenance. To develop and validate procedures for recycling asphalt pavements and evaluate possibilities of recycling other materials. M.C. Belangie, M.L. Wiley, D. E. Peterson. HRIS 31-136011 ACTIVE

(7) Modifications of Gradations to Improve Bituminous Mixture Properties. Study of gradation revisions, specifications limits of asphalts, stability requirements, and sampling and testing techniques on mix properties. Peterson. HRIS 31-156992 ACTIVE

(8) Predicting the 28-Day Strength of Portland Cement Concrete by Nuclear Densities. A feasibility study of the use of nuclear density determinations for the 28-day strength of concrete. J. McBride. HRIS 32-156993 (Citations) COMPLETE

(9) Bituminous Paving Operations. To develop rational procedures and specifications for bituminous paving operations that will maximize performance. M.A. Basha, D. I. Anderson, W.L. Shepherd. HRIS 33-177956 ACTIVE

(10) Preventive Pavement Rehabilitation Decision Strategies. To develop a workable set of rehabilitation design strategies that will maximize pavement performance and minimize expenditures. D.E. Peterson, L.W. Shepherd, D. Anderson, C.C. Sy. HRIS 40-177961 ACTIVE

(11) Interstate Lighting. Study of lamp life and replacement procedures and energy requirement for highway lighting. M. C. Belangie. HRIS 40-105628 COMPLETE

(12) Evaluation of Flexible Pavement Crack Sealing Methods Used in Utah. To determine extent of cracking, identify materials and techniques used to repair cracks, and develop criteria for sealing cracks, as to need, type of material and equipment needed. M. C. Belangie. HRIS 40-136010 ACTIVE

44. UTAH (contd)

(13) Developing and Improving Techniques and Materials for Wet and Cold Patching on Asphalt and Portland Cement Concretes. To evaluate existing materials and procedures and recommend improvements. V. K. Sorbe, E. R. Carlsen. HRIS 40-082633 (Citations) COMPLETE

b. Utah State Highway Safety Program Office: 455 East 4th Street South, Salt Lake City, 84111

(1) Emergency Medical Services - Effect on Reducing Injury Severity in Utah. To compare the ratio of fatalities to injuries before and after the start of emergency medical services, and in areas without such services. C. Preston, R.N. Byrd. HRIS 51-156990 ACTIVE

(2) Implementation and Operation of Fatality Analysis File. To establish a research-oriented file in support of the Alcohol Countermeasures Program and a means of evaluating that program. R. A. Johnson. HRIS 51-038088 COMPLETE

(3) Alcohol Related Crashes. To determine if it is statistically possible to differentiate between alcohol-related crashes and other fatal accidents, determine pertinent variables for such determinations, and determine level of reporting of alcohol related crashes. C. Preston, R.N. Byrd. HRIS 52-156989 ACTIVE

(4) Habitual Offender Involvement in Fatal Crashes. To compare the fatal crash profiles involving habitual offenders to that of other drivers. C. Preston, R.N. Byrd. HRIS 52-156991 ACTIVE

(5) Problem Drinking Driver Involvement in Fatal Crashes. To compare the fatal crash profiles involving drinking drivers with that involving others. C. Preston, R. N. Byrd. HRIS 52-156994 ACTIVE

(6) Seatbelt Effects and Usage. Drivers and occupants involved in fatal crashes will be analyzed by seating position to estimate the relationship of injury severity to seatbelt usage. C. Preston, R. N. Byrd. HRIS 52-156996 ACTIVE

(7) Vehicle Defects - A Contributing Factor in Crashes. Analysis of vehicle defects which contribute to fatal crashes, and a comparison of the profiles of such crashes with others. C. Preston, R.N. Byrd. HRIS 53-156999 ACTIVE

c. Utah Department of Public Safety: Salt Lake City, 84114

(1) Alcohol Safety Action Project. Application and demonstration of this project as a measure towards reduction of death and injury. K. A. Jackson. HRIS 51-025158 COMPLETE

d. Utah State University: Logan, 84321

(1) A Continuing Comprehensive Study of Utah Travel. To analyze and compile travel and forest recreation research and other information as basis for a series of regional workshops in economic development and land planning. J. D. Hunt. HRIS 55-138430 (Citations) ACTIVE

e. University of Utah: Salt Lake City, 84112

(1) Use of Synthetic Rubber-in-Asphalt Pavement to Determine Mixture Behavior and Pavement Performance. An evaluation of the effects of various proportions of rubber solids and various viscosity asphalts on pavement performance. V. K. Sorbe, J. S. Lai. HRIS 31-103577 (Citations) ACTIVE

44. UTAH (contd)

f. Brigham Young University: Provo, 84602

(1) Development of Warrants for Left-Turn Signal Phases. One-way and Two-way Left Turn Lanes. To establish a system of warrants for installations of traffic control signals on a rational basis in such cases. D. L. Kennison, G. S. Thurgood. HRIS 54-177957 FUTURE

g. County of Salt Lake, Alcohol and Drug Abuse Services Department: 250 East Third South, Salt Lake City, 84111

(1) Problem Drinker Driver School. To identify the problem drinker who is convicted of driving under the influence of alcohol and by means of special classes, reduce recidivism in that group. L. Peterson. HRIS 52-156995 ACTIVE

45. VERMONT

e. University of Vermont: Burlington, 05401

(1) Effects of Alternative Pricing Structures on Pooling Methods on the Dairy Industry in the Northeast. A contribution to a regional project analyzing effects of milk pricing, including the efficiency of milk assembly and transport. F. C. Webster. HRIS 15-082566 (Citations) ACTIVE

(2) Influence of Alcohol upon Control - Use During Driving. To examine the influences of alcohol upon control use and driving. D. K. Damkot. HRIS 51-177964 INACTIVE

46. VIRGINIA

a. Virginia Department of Highways and Transportation: 1221 East Broad Street, Richmond, 23219

(1) Travel and Accident Data. To provide timely, consistent and complete nationwide data concerning number of fatal and injury accidents as they relate to the highway system. J. P. Mills, Jr., W. B. Shelton, E. N. Stitzer. HRIS 51-106555 (Citations) ACTIVE

c. Virginia Highway and Transportation Research Council: P. O. Box 3817, University Station, Charlottesville, 22903

(1) Computer Graphics: A Pilot Study. To determine the usefulness of computergraphics in environmental evaluations. W. E. Welsh, D. D. McGeehan. HRIS 12-193170 (Citations) COMPLETE

(2) Efficiency of Bus Stop Location and Design. An examination of the impact of bus stop location and design on the operational efficiency of the urban bus and the traffic system. M. J. Demetsky. HRIS 12-193213 ACTIVE

(3) The Desirability and Feasibility of Alternative Means of Financing Transportation in Virginia. Development of a single equation forecasting model to predict transportation revenues from major existing and alternative sources through 1985. G. E. Allen. HRIS 14-193172 (Citations) COMPLETE

(4) A Survey of Elderly and Handicapped Riders on the Charlottesville Transit System. To develop a profile of these persons, as determined from a mail-out survey of them. E. D. Arnold, Jr. HRIS 16-196021 (Citations) ACTIVE

(5) Survey and Analysis of Special Transportation for the Elderly and Handicapped in Virginia's Urbanized Areas. Summary and analysis of activities in Virginia undertaken through the planning process to address needs for transportation of these persons. E. D. Arnold, Jr. HRIS 16-195305 (Citations) COMPLETE

46. VIRGINIA (contd)

c. (6) Energy Conservation in Transportation in Virginia. Halstead. HRIS 17-193180 ACTIVE

(7) A Procedure for Estimating the Frequency Distribution of CO Levels in the Micro-Region of a Highway. To develop an efficient algorithm for estimating probability that a highway will violate the national ambient air quality standards at a particular site. Carpenter. HRIS 17-193199 ACTIVE

(8) Aerotriangulation Control of Large Scale Photography from Small Scale Photography. To reduce ground control by using points determined from small scale photography and transferring or using such positions to control large scale photography. Bales, Brill. HRIS 21-193164 ACTIVE

(9) A Comparative Analysis of Various Methods of Photologging. To determine uses of photologging, the most suitable equipment available and the cost options for different systems. D.D. McGeehan. HRIS 21-193169 (Citations) COMPLETE

(10) Effectiveness of Predictive Computer Programs in the Design of Noise Barriers - A Before and After Approach. Field study of noise barriers utilizing current predictive procedures to evaluate barrier performance. J.K. Haviland, D. F. Noble. HRIS 21-157014 (Citations) ACTIVE

(11) Evaluation of the Performance of Portable Precast Concrete Traffic Barriers. A study of the effectiveness of these barriers on redirecting vehicles and an examination of the effects of construction on traffic characteristics and accidents. F. N. Lisle, B. T. Hargroves. HRIS 21-193186 (Citations) COMPLETE

(12) Development of Design Guidelines for Raised and Traversable Medians in Urban Areas. To develop these guidelines for use by designers in selecting median designs for urban projects. M. R. Parker, Jr., R. H. Bennett. HRIS 21-177991 (Citations) ACTIVE

(13) Evaluation of Filter Fabric Silt Fences for Sediment Control. To determine suitability of this material as temporary control structures. D.C. Wyant. HRIS 22-157015 ACTIVE

(14) Installation of Straw Barriers and Silt Fences. To develop a step-by-step approach for the effective installation of straw bale and silt fences for sediment control. D. C. Wyant, W. C. Sherwood. HRIS 22-157033 (Citations) ACTIVE

(15) Sidewalk Undermining Studies. Determine causes for sidewalk undermining, develop specifications to prevent future undermining, and develop maintenance methods that will prevent future recurrance. H.W. Plott, K.H. McGhee. HRIS 22-157058 (Citations) ACTIVE

(16) Experimental Mowing. To reduce mowing costs without sacrificing safety or esthetics. D. C. Mahone, R. L. Flink, D.L. Wright, W. R. Clements. HRIS 23-157023 ACTIVE

(17) Evaluation of Standing Noise Barriers. An assessment of the effectiveness of such noise barriers as wooden, metal and concrete walls. J.K. Haviland, D. F. Noble. HRIS 23-193183 (Citations) ACTIVE

(18) The Effects of Stream Channelization on Bottom Dwelling Organisms. To determine these effects on three streams at different distances downstream from the disturbance, and determining biological, physical and chemical parameters. D. C. Wyant. HRIS 23-082598 (Citations) ACTIVE

(19) Effects of Channelization on the Water Quality of Simpson Creek. Determination of physical, chemical and biological measurements before, during and after construction on a trout stream. D.C. Wyant, J.W. Reynolds. HRIS 23-136036 (Citations) ACTIVE

46. VIRGINIA (contd)

c. (20) The Applicability of Infrared Thermography in the Detection of Bridge Deck Delamination. Determination of sensitivity of infrared thermography in detecting delamination and a comparison of the technique with chain drag, and other methods. Clemena. HRIS 24-157002 ACTIVE

(21) Evaluation of Experimental Flexible Pavements. Evaluation of pavement performance with trial features, and to better define strength coefficients with respect to both materials and their location within the structure. K. H. McGhee. HRIS 24-102092 (Citations) ACTIVE

(22) Evaluation of Temperature Effects on Bituminous Pavement Deflections. To determine the relationship between pavement temperature and deflection correlation factor. Vaswani. HRIS 24-193184 ACTIVE

(23) Design of Overlays Based on Pavement Conditions, Roughness and Deflections. To develop a tentative method for designing overlays for flexible pavements for temporary use, and a design method for permanent use. N. K. Vaswani. HRIS 24-177990 (Citations) ACTIVE

(24) Virginia's Wet Pavement Accident Reduction Program. Study of wet pavement accidents so as to develop methods for establishing priority treatments on an economic basis, and evaluating the significance of the treatments. S. N. Runkle, D.C. Mahone. HRIS 24-157070 (Citations) ACTIVE

(25) Survey of Rigid Pavement Joint Movements. To explain certain blowup phenomenon and to modify joint design and sealant practices. K. H. McGhee. HRIS 24-101450 (Citations) ACTIVE

(26) Study of Pavement Subdrainage Systems. To upgrade pavement subsurface drainage standards in view of drainage related problems in recent years. C.G. Johnson. HRIS 24-082602 ACTIVE

(27) Permissible Weight Limits for Construction Vehicles on Finished and Unfinished Pavements. To determine the number of passes of heavy construction equipment that could be borne by the different layers of flexible pavement during and after construction. N. K. Vaswani. HRIS 24-136057 ACTIVE

(28) Development of Overlay Decision Guidelines and a Pavement Rating System for Virginia. To develop these guidelines for field personnel evaluating flexible pavements for structural overlay purposes. K. H. McGhee. HRIS 24-157012 ACTIVE

(29) Effect of Nonuniform Shear on Stresses in Bridge Girders. A study of the effects of nonuniform shear on stress distribution and longitudinal and transverse deformation characteristics of typical as well as arbitrary girder cross sections. Barton. HRIS 25-193177 ACTIVE

(30) Deflection and Camber Loss in a Heat-Curved, Curved Girder Bridge. To determine the dead load deflections and camber loss in a 140 foot span bridge during and after construction. M. H. Hilton. HRIS 25-136032 ACTIVE

(31) Glulam Timber Deck Bridges. To evaluate the cost, construction and initial condition of bridges built with glulam deck panels on steel stringers. M. M. Sprinkel. HRIS 25-193190 (Citations) COMPLETE

(32) Internally Sealed Concrete for Bridge Deck Protection. Laboratory and field evaluation of the use of wax beads in the concrete mix and application of heat in order to seal the concrete against moisture and chlorides. S.S. Tyson. HRIS 25-157037. ACTIVE

46. VIRGINIA (contd)

c. (33) Loading Study of Older Highway Bridges in Virginia. To determine experimentally the live load stresses that are developed from standard design loadings in key members or critical locations of three older bridge categories. H.L. Kinnier. HRIS 25-082608 ACTIVE

(34) Methods of Modifying Historic Bridges for Contemporary Use. A study of ways in which historic bridges can be preserved for use for vehicles or for other purposes. Newlon. HRIS 25-177988 ACTIVE

(35) Polymer Impregnated Bridge Slabs. To monitor and report on an application of polymer materials with good potential for improving concrete bridge performance. S. S. Tyson. HRIS 25-193197 ACTIVE

(36) Predicting Moisture-induced Damage to Asphaltic Concrete - Field Evaluation Phase. To evaluate and provide design criteria for a moisture predicting test, and evaluate the effect of freeze-thaw moisture damage on fatigue life of laboratory molded beams. G. W. Maupin, Jr. HRIS 31-157050 ACTIVE

(37) Prediction of Fatigue Behavior of Bituminous Base Mixes. To correlate fatigue test results with indirect tensile test results for these mixes. Maupin. HRIS 31-193198 ACTIVE

(38) Relationship between Properties of Hardened Concrete and Bridge Deck Performance. To develop relationships between deck performance and initial concrete properties and establish those properties that must be demanded of non-specification concrete before decision to remove or apply remedial measures. Newlon. HRIS 32-157054 ACTIVE

(39) Air Void System Affected by the Grinding Aids and the Air Entraining Agents. Tests of mortar bars with different types of air entraining agents and cements with different grinding aids. H. C. Ozyildirim. HRIS 32-193165 ACTIVE

(40) Effective Field Use of Superplasticized Concrete. To develop guidelines for the preparation, use and testing of this material for bridge decks. M. M. Sprinkel. HRIS 32-177995 ACTIVE

(41) Evaluation and Adaptation of Swiss Microscopic Methods of Examination of Hardened Portland Cement Concrete. A study of the adaptation of this method of quality control to the practices and types of concrete in use in this country. Walker. HRIS 32-193181 ACTIVE

(42) Study of Cracking Characteristics of Continuously Reinforced Pavements. A study of the differences in cracking of concrete pavements constructed with and without transverse reinforcing. K. H. McGhee. HRIS 32-104201 (Citations) ACTIVE

(43) Void Distribution in Field Concrete. To investigate the source of high air contents found in certain low strength field concrete samples. H. C. Ozyildirim. HRIS 32-157071 ACTIVE

(44) Evaluation of the Troxler 3411 Nuclear Gage for Control of Density in Fresh Concrete. An effectiveness evaluation of this gage for low slump bridge deck overlays and ordinary pcc in continuously reinforced concrete pavements. Tyson. HRIS 32-193188 ACTIVE

(45) Evaluation of Epoxy Coated Reinforcing Steel. Field evaluation and study of problems encountered during fabrication and construction and steel condition after concrete placement. W. T. McKeel, Jr. HRIS 34-136042 (Citations) ACTIVE

(46) Evaluation of Treated Wooden Sign Posts. To determine if the retroreflective qualities or general appearance of the facing materials in highway signs will be altered by the use of treated posts. S. R. Blackwell. HRIS 34-157021 ACTIVE

46. VIRGINIA (contd)

c. (47) Experiment with Dust Control on Secondary Roads. To find effective alternate and less expensive methods of dust control. D. C. Mahone. HRIS 34-157022 ACTIVE

(48) Sign Post Paint Evaluation. To determine the effects of paint residues on sign panels which are mounted on wooden posts and painted with six types of paint. S. R. Blackwell. HRIS 34-157059 (Citations) ACTIVE

(49) Survey of Virginia Aggregates for Chloride Contents. Survey of total chloride contents and water soluable chloride contents in determining aggregate role in corrosion of reinforcing steel. J. W. Reynolds. G.G. Clemena. HRIS 35-177989 ACTIVE

(50) Contract Maintenance in Virginia: State-of-the-Art. Evaluation. A study of all aspects of contract maintenance, documenting types of work, extent of contracts, costs and results. F. N. Lisle. HRIS 40-193171 FUTURE

(51) Highway Maintenance Management Based on Assessed Needs. To implement and evaluate a pilot maintenance program employing an "assessed needs" approach in several residencies. D. C. Mahone, F. N. Lisle. HRIS 40-193192 FUTURE

(52) An Assessment of the Need for Changes in Virginia Law Concerning Headlamp Usage at Dusk and Dawn. Examination of the visual needs of drivers at dusk and dawn and determine how well current laws meet these needs. E.J. Rinalducci. HRIS 51-193166 ACTIVE

(53) An Evaluation of the Following-too-Closely Monitoring System. To evaluate the device that tells a motorist that he is following the car in front of him too closely by means of a flashing light. M.R. Parker, Jr. HRIS 51-157018 (Citations) ACTIVE

(54) Evaluation of the Increase in Traffic Fatalities in Virginia in 1977. To determine factors responsible for the increase in the 1977 fatalities. D. Mitchell, C. Lynn. HRIS 51-193185 COMPLETE

(55) Development of a Training Manual for Drivers Escorting Oversize Manufactured Housing Units in Virginia. To develop a manual and other necessary training materials for drivers doing this escort duty. M. R. Parker, Jr. HRIS 51-193173 ACTIVE

(56) Development of a Uniform Mass Transit Safety Records System. To develop a comprehensive transit accident reporting system for the State. P.J. Hajec. HRIS 51-193174 FUTURE

(57) Identification of Traffic and Safety Needs in Virginia. To identify traffic and safety management needs in Virginia. D. Mitchell, M.R. Parker, Jr. HRIS 51-193193 ACTIVE

(58) An Investigation of the Effectiveness of Written Driver Reexaminations. To evaluate the effects of written driver knowledge exam on the subsequent performance of the drivers. C. B. Stoke. HRIS 51-136053 (Citations) COMPLETE

(59) Mopeds - Bicycle or Motorcycle? Report of an analysis of accident data involving mopeds, the needs for regulating mopeds, and recommend legislation for Virginia on the subject. C.B. Stoke. HRIS 51-193196 (Citations) COMPLETE

(60) Review of Speed Laws Governing Movement of Oversize Loads by Highways. To examine the feasibility of raising the maximum speed limit from 45 mph to 55 mph for oversize manufactured housing units. M. R. Parker, Jr. HRIS 51-193201 ACTIVE

(61) Transportation Safety Attitudes of Virginians: Results of the 1978 Transportation Safety Public Opinion Poll. Random sampling of over 2000 families for views on passive restraint systems, motorcycle helmet legislation, radar detectors, speed limit, etc. C. Lynn. HRIS 51-193206 ACTIVE

46. VIRGINIA (contd)

c. (62) A Study of Roadway Lighting in Virginia. Measurement of illumination levels to compare with design levels, maintenance requirements, effectiveness in reducing accidents evaluated, etc. M. H. Hilton. HRIS 51-106357 ACTIVE

(63) Management System for Evaluating Motorcycle/Trailer and Rejection Receipts in the Virginia Periodic Motor Vehicle Inspection Program. To develop sample size, procedures and formats for analysis of these receipts. D. Mitchell, J. L. Korf. HRIS 53-193195 COMPLETE

(64) Semiannual versus Annual Motor Vehicle Inspection: An Evaluation of the Literature and Benefit-Cost Analysis. To compare the two systems. J. J. Abbene. HRIS 53-193204 COMPLETE

(65) Evaluation of Centerline Pavement Marking Patterns on Two-lane Highways in Mountainous Areas. To determine if the single, broken, yellow centerline pattern used in Virginia should be replaced by the standard marking patterns of no-passing zones or some other system. M. R. Parker, Jr., M. E. Rawlings. HRIS 54-177992 (Citations) ACTIVE

(66) An Evaluation of Parking Management Techniques. To describe alternative parking controls to reduce miles of travel, establish criteria indicating impact of parking controls, and evaluate the effectiveness and legality of parking control techniques. M. R. Parker, Jr., HRIS 54-157016 (Citations) ACTIVE

(67) Evaluation of Recessed, Snowplowable Markers for Centerline Delineation. Determine feasibility of using raised pavement markers placed in pavement grooves as a guidance aid for motorist in wet-night conditions. Shepard. HRIS 54-193182 ACTIVE

(68) The Feasibility of Centerlining and Edgelining Narrow Rural Roads in Virginia. To determine safety and operational effects of such marking on pavement widths of 18 feet and less, examine public opinion and outline advantages and disadvantages of marking narrow roads. M. R. Parker, Jr. HRIS 54-157025 (Citations) ACTIVE

(69) A Highway Advisory Radio for Construction and Maintenance Operations. To evaluate the radio unit on the basis of its effect on traffic flow through a pavement resurfacing project. F. D. Shepard. HRIS 54-193191 ACTIVE

(70) Impact of General Permissive Right and Left Turn on Red Legislation in Virginia. To examine the benefits and problems resulting from the general permissive turns on red legislation. M. R. Parker, Jr. HRIS 54-193194 (Citations) COMPLETE

(71) Installation of Raised Pavement Markers for Reducing Incidence of Wrong Way Driving in Snow Plow Regions. The adaption of the system of raised markers found to be effective in alerting wrong-way drivers in areas where snowplowing is prevalent. Shepard. HRIS 54-177987 ACTIVE

(72) Measures for Preventing Wrong-Way Entries on Highways. To determine means of alleviating the problem of wrong-way driving on four lane divided highways. V. K. Vaswani. HRIS 54-106553 (Citations) COMPLETE

(73) Investigations of a Semi-empirical Method for estimating the Areal Distribution of Messoscale Carbon Monoxide Concentrations. To investigate a method as to its use in relating carbon monoxide concentrations calculated from the sappolut urban grid emissions model to average measured carbon monoxide concentrations in each grid as determined by a field measurement program. Clemana. HRIS 55-157039 ACTIVE

(74) Instrumentation of Culvert Pipes under a Deep Fill. Investigation of deflection strains in a 96-inch reinforced concrete and 60-inch corrugated steel culvert under a deep fill, the settlement of which was also measured. H. G. Lars, F. W. Barton, D. C. Wyant. HRIS 62-109552 (Citations) ACTIVE

46. VIRGINIA (contd)

c. (75) Evaluation of Subgrade Moduli of Flexible Pavements in Virginia. A study of the correlation of a number of engineering properties with the subgrade modulus of all Virginia soils. N. K. Vaswani. HRIS 62- 136045 ACTIVE

d. Virginia Polytechnic Institute and State University: Blacksburg, 24061

(1) A Systems Analytic Technology Assessment for Rural Public Transportation. To develop a comprehensive examination of alternative technologies and operating strategies for providing a demand responsive rural transit service. R.J. Popper. HRIS 11-136064 COMPLETE

(2) Develop Computer Simulation Exercise for Transportation Personnel Development. To develop a simulation exercise or management game that could be used to assist in formal or informal personnel development programs in the transit industry. P. E. Torgersen. HRIS 11-000053 COMPLETE

(3) Optimum Network for Given Transportation Demand Model between Nodes or Passenger Sources in a Given Network for a Given Type of Guideway. Determination of a comprehensive computer algorithm by which any transportation guideway network servicing a given set of cities or nodes can be "optimized." R.L. Whitelaw. HRIS 12-178001 ACTIVE

(4) Service Pricing and Urban Development. To investigate combinations of two urban service pricing policies and three land use control policies and assess the impacts on revenue production and interim development and redevelopment policies of Fairfax County. J. W. Dickey. HRIS 15-136027 COMPLETE

(5) Urban Transportation Program Budgets. To develop procedures and guidelines to be employed by metropolitan area agencies in creating urban transportation budgets. HRIS 14-055582 COMPLETE

(6) Study of Metal Levels in Immediate Environment of Highways. To evaluate the relationship between automobile traffic densities and the heavy metals levels in the immediate environment of the highway. HRIS 17-059281 ACTIVE

(7) Producing Vegetative Cover on Steep Slopes Concurrently with and Subsequent to Highway Construction. Study of mulching and binding agents or chemicals to stabilize slopes, measure erosion under the mulching, determine if miniature benching is desirable, and determine best plants to use. H. D. Perry, R. E. Blaser. HRIS 23-101202 (Citations) COMPLETE

(8) Low Maintenance Vegetation for Erosion Control. Study of vegetation covers as a means of controlling erosion on highway slopes. R. E. Blaser, G. Engelbrecht. HRIS 23-157042 ACTIVE

(9) Improving Vegetation and Mowing Management in Highway Corridors. To reduce fuel, machine and labor costs in mowing, study types of growth, and establish vegetative covers from winter seedings. R.E. Blaser, P.P. Adams. HRIS 23-178000 ACTIVE

(10) Establishing Native Ground Covers along Interstate Highways. Determine most suitable ground cover species for West Virginia Interstate Highways. R.E. Blaser, G. Engelbrecht. HRIS 23-193210 FUTURE

(11) A Simulation Model for the Flow of Hazardous Material in Virginia. To determine where and what hazardous materials flow through Virginia in trucks, and conduct emergency responses training. D.L. Price, J. W. Schmidt. HRIS 51-177998 ACTIVE

46. VIRGINIA (contd)

d. (12) Mobile Safety Display. To build a small trailer-mounted simulator for demonstration of the effects of speed, following distance and reaction time in highway safety. N. Eiss. HRIS 51-177997 ACTIVE

(13) CB Network Feasibility Study. To determine feasibility of establishing a NEAR program in Virginia. D.L. Price, R. P. Davis. HRIS 51-177999 (Citations) ACTIVE

(14) Correlation of Soil/Volume Change and Permeability with other Physical Characteristics. To determine particle size distribution, moisture desorption characteristics, consistency, swelling potential, compaction and shear strength of soils. D.F. Amos. HRIS 61-108936 COMPLETE

e. Adaptronics, Incorporated: 7700 Old Springhouse Road, McLean, 22101

(1) Highway Safety Programs Effective Model. To assess quantitatively the effectiveness of highway safety programs. J. K. Chang, A. N. Mucciardi. HRIS 51-157027 (Citations) ACTIVE

(2) Analysis of Head Injury Function. To design an empirical nonlinear model of head injuries from head motion information taken from a series of head-impact experiments conducted on monkeys. M. D. Johnson, A.N. Mucciardi. HRIS 51-177965 (Citations) COMPLETE

i. ENSCO, Incorporated 5408-A Port Royal Road, Springfield, 22151

(1) Surface Texture Measurement Evaluation. To develop a pavement texture evaluation system, and determine relationship between skid resistance and texture. Rudd. HRIS 24-193152 ACTIVE

j. Essex Corporation 201 North Fairfax Street, Alexandria, 22314

(1) Accident Avoidance Skill Training. To develop and evaluate methods of training specific accident avoidance behaviors. J. R. Bathurst, M. Kirkpatrick. HRIS 51-157000 ACTIVE

l. General Environments Corporation: 6840 Industrial Road, Springfield, 22151

(1) Study of Emissions from 6000 to 8500 Pound GVW Vehicles. To gather statistics on individual exhaust emission tests from 250 consumer owned and operated vehicles from model years 1972-1976. L. H. Washington. HRIS 53-157061 ACTIVE

q. Institute for Defense Analysis: 400 Army-Navy Drive, Arlington, 22202

(1) Study to Aid the Federal Energy Administration in Understanding the Micro-economic Aspects of Energy Conservation. A study of various actions that might be taken to conserve energy in transportation, building construction, existing structures, etc. HRIS 15-136028 ACTIVE

s. Mitre Corporation: Westgate Research Park, McLean, 22101

(1) Advanced GRT Planning Report. An analysis of social, economic, institutional and performance factors associated with Advanced GRT which may influence future advance GRT program Planning. HRIS 11-160309 ACTIVE

(2) A Technology Assessment of Personal Rapid Transit Systems. HRIS 12-045786 COMPLETE

(3) Automated Guideway Transit Socio-economic Research Program Support. To evaluate alternative methodologies and to review findings of socio-economic trade-offs and markets study. G. E. Mouchahoir. HRIS 12-177979 (Citations) ACTIVE

46. VIRGINIA (contd)

s. (4) Downtown People Mover Program. To assist UMTA in developing a comprehensive understanding of system interactions and provide background for orderly and informed decision making. F. L. Willingham. HRIS 12-177980 (Citations) ACTIVE

(5) Study the Integration of Automated Transit Information System with Related Transit Systems. A report on the state-of-the-art of integrated transit information systems for scheduling, routing monitoring vehicle movement, providing customer information and other operational activities. D. F. O'Sullivan, P. Wood. HIRS 12-193158 (Citations) ACTIVE

(6) Transit Operations and Management Systems (TOMS) Program. To develop various techniques, procedures and tools and demonstrations for management aids in the operating transit property environment. HRIS 12-011893 COMPLETE

t. Northern Virginia Transportation Commission: 2009 North 14th Street, Suite 300, Arlington 22201

(1) Dulles International Ariport Improved Access Immediate Action Program. To determine whether improved high speed bus service can shift some air passengers from the more accessible National Airport. D. F. Erion, M. R. Politano. HRIS 12-193159 ACTIVE

(2) Study of Paratransit Alternatives to Off-peak Bus Service in the Suburbs. Identify possible paratransit systems: explore legal and institutional barriers and means of overcoming them: identify areas where it would be most viable: and show how it could be integrated with Metrobus and rail systems. J. J. Protopappas. HRIS 12-157062 (Citations) COMPLETE

v. PRC. Public Management Service, Incorporated: 1764 Old Meadow Lane, McLean, 22102

(1) Traffic Law Sanctions Study. To gather more information on the operations and impact of traffic sanctions, comparing lenient, harsh and moderate policy/programs. J. McGuire, T. McEwen. HRIS 70-177985 ACTIVE

z. Alan M. Voorhees and Associates: Incorporated: 7798 Old Springhouse Road, McLean 22102

(1) Transportation System Management Institutional and Planning Research. To assess TSM action impacts in relation to a variety of typical urban goals and objectives. T. Deen, S. Lockwood, A. K. Gilbert, F. A. Wagner. HRIS 11-193145 (Citations) ACTIVE

(2) Institutional and Planning Research for Transportation System Management. To isolate planning procedures that have been effective in implementing TSM: unify existing information to provide guidance: and identify innovative institutional and technical approaches and procedures that can improve TSM effectiveness. HRIS 11-160079 ACTIVE

(3) Analyze the Evaluation of the Implementation of the Urban Corridor Demonstration Program. To provide technical assistance in making evaluations of the Programs, and evaluate the effectiveness of the implementations. HRIS 12-055853 COMPLETE

(4) Methods for the Identification of Alternatives. To provide UMTA with methods for the generation of transportational alternatives for future major urban transportation investments. Kanen, Skinner, W.S. Herald, Lemer. HRIS 12-193143 ACTIVE

(5) Preparation of an Urban Transportation Energy Conservation Manual. To develop a set of analytical tools for use by metropolitan planning organizations in analyzing energy saving potential of urban transportation actions. W.A. Jessiman, J. H. Suhrbier. HRIS 17-157051 COMPLETE

46. VIRGINIA (contd)

ad. Department of Civil Engineering, University of Virginia: Charlottesville, 22904

(1) Development of Integrated Transit Services for a Rural-Suburban County. To establish transportation needs and travel patterns, design transportation services, evaluate organizational strategies and develop preliminary plans for a paratransit program. L. A. Hoel, M. J. Demetsky. HRIS 12-193212 (Citations) ACTIVE

(2) Development of Integrated Transit Services for a Rural-Suburban County. Develop a procedure for decision-making process for ranking alternatives: develop organization and management plan: prepare financial plan: and review institutional regulatory and labor issues. L.A. Hoel, M. J. Demetsky. HRIS 12-193211 ACTIVE

(3) Methodology for the Design of Urban Transportation Interface Facilities. To develop flexible criteria for evaluation of alternative station designs and a methodology for station designs. L. A. Hoel, M. J. Demetsky. HRIS 12-058757 (Citations) ACTIVE

(4) Traffic Restraint: An Evaluation of Parking Controls. Describe alternative controls, establish criteria and evaluate effectiveness of policy options. Demetsky. HRIS 54-157064 ACTIVE

ae. Artech Corporation: 2901 Telestar Court, Falls Church, 22042

(1) Basic Ordering Agreement (Time and Materials) with Task Orders for Inspection and Testing Services for Motor Vehicle Equipment. Develop quick reaction/response inspection and testing of motor vehicles or equipment in a variety of fields including metallurgy, emissions, crash testing, etc. H. Hahn. HRIS 53-193141 ACTIVE

aj. Kappa Systems, Incorporated: 1501 Wilson Boulevard, Arlington, 22209

(1) Uniform Tire Quality Grading Data Management System. Systems Analysis, design development, implementation and production of data management system for tire test data. C. Assay, T. Gilfoy. HRIS 34-157066 (Citations) ACTIVE

(2) NCSA Statistical Data Systems Management. Computer system analysis, design and programming in support of large statistical data bases established by the National Center for Statistics and Analysis, National Highway Traffic Safety Administration. B. Beddow, J. McGurrin, M. Lowery, J. DeGoes. HRIS 51-193157 ACTIVE

(3) National Accident Sampling System (NASS). Implement small teams of accident investigators to be under contract to NHTSA for collection of accident data. B. Beddow, A. Bloch, P. Lenihan, J. Peizer, R. Johnson. HRIS 51-177978 ACTIVE

(4) Operation and Maintenance of the Combined OSE Periodic Reports System and Tire Test Data Management System. To provide for the operation and maintenance of a computer application for the Office of Standards Enforcement (OSE) Tire Test Data Management System. K. Allen, C. Marris, J. Schaper. HRIS 53-048708 ACTIVE

(5) National Parts Return Program. To gather information on defective automotive parts to help NHTSA identify existence of safety-related manufacturing defects. M. Lowery, V. Nash, R. Cashman, J. Copper. HRIS 53-157047 (Citations) ACTIVE

ak. National Public Service Research Institute: 123 North Pitt Street, Alexandria, 22314

(1) State Records and Information Systems. To develop a traffic safety problem identification model based on actual Statewide traffic records data and provide analysis assistance to eight pilot states. L. A. Spell, J. A. McKnight. HRIS 51-177689 ACTIVE

46. VIRGINIA (contd)

ak. (2) Integrated Safe Driving Information System Development. To identify means by which States can improve the dissemination of safe driving information among various categories of drivers. A. J. McKnight. HRIS 51-157035 COMPLETE

(3) Development of Driver Improvement System for Traffic Violators and Accident Repeaters. To develop and field test a curriculum capable of leading to improvement in the driving safety of convicted traffic violators. A. J. McKnight. HRIS 51-177982 ACTIVE

(4) Advanced Motorcycle Rider Course Development Plan. To identify the requirements for advanced motorcycle rider instructions. A. J. McKnight. HRIS 51-177981 ACTIVE

(5) Youth Alcohol Safety Education Criteria Development. To develop an instrument capable of assessing knowledge, attitudes, and behaviors relative to drinking and driving, A. J. McKnight. HRIS 52-177983 ACTIVE

(6) Assessment of Vehicle Safety Problems for Special Driving Populations. To identify driving problems encountered by physically disabled drivers. A. J. McKnight. HRIS 52-157005 ACTIVE

(7) Development of an In-Traffic Test for Motorcyclists. To develop an in-traffic performance test for motorcyclists to assess an operator's ability to apply the knowledge and skills required in the highway environment. HRIS 52-160208 COMPLETE

an. Science Applications, Incorporated: 1651 Old Meadow Road, Suite 260, McLean, 22101

(1) Alternative Approaches to the Evaluation of the Impact of New Rail Rapid Transit System. To identify and quantify conditions in urban areas which are appropriately attributable to the new rail rapid transit operations. HRIS 15-160444 ACTIVE

ar. Virginia Department of State Police: P. O. Box 27472, Richmond, 23261

(1) Fatal Accident Reporting System (FARS). Research on accidents in which a fatality occurs involving alcohol or drugs: driver education and traffic awareness measures: emergency medical services: court records and procedures: driver licensing: vehicle registration, etc. S.N. Hall. HRIS 51-193163 ACTIVE

as. International Research and Technology Corporation: 7655 Old Springhouse Road, McLean 22101

(1) Transportation Energy Conservation Network. To provide a long range (to 2025) forecasting model to evaluate the implications of alternative policy decisions effecting transportation energy conservation. R. Meyer, R. Doggett. HRIS 17-157065 (Citations) ACTIVE

av. Allen Corporation of America: 517 South Washington, Alexandria, 22314

(1) Training Program for the National Accident Sampling System. To develop an instructional program for preparing personnel in data collection field work for the NASS pilot study. R. E. Reilly. HRIS 12-160347 (Citations) ACTIVE

aw. Advance Management Systems, Incorporated: 6641 Old Dominion Drive, McLean, 22101

(1) Development of Life Cycle Cost Procurement System for Urban Full Size Bus Vehicles. To establish method of procurement of 40-foot transit buses based on an operators actual operating cost data and manufacturers assessments of life cycle cost savings relating to their own bus designs. HRIS 15-160011 ACTIVE

46. VIRGINIA (contd)

ax. Fred S. James and Company, Incorporated: 1600 Wilson Boulevard, Arlington, 22209

(1) The Insurance Risk Management Programs of Mass Transit Systems. V.W. Ryland. HRIS 11-193155 (Citations) ACTIVE

ay. Teknekron, Incorporated: 1483 Chain Bridge Road, McLean, 22101

(1) Occupant Resistant Legislation Handbook: A Guide for Proponents. To develop a handbook for individuals and organizations involved in efforts to gain legislative approval of general safety belt usage laws or child restraint laws. W.B. Wilson. HRIS 51-193160 (Citations) COMPLETE

az. Underground Technology Development Corporation: 8425 Frye Road, Alexandria, 22309

(1) Economic Factors in Tunnel Construction. To develop a new cost estimating system for tunneling for use in evaluating cost impact of decisions during sequential stages of planning and design of urban transportation tunnels. E. Foster, I. Toporoff. HRIS 25-129710 ACTIVE

47. WASHINGTON

a. Washington State Department of Transportation: 1A3 Highway Administration Building, Olympia, 98504

(1) Acoustic Geometric Computer Program. To integrate the existing geometric computer program with an acoustic forecasting model. HRIS 12-157074 FUTURE

(2) Social Factors in Transportation Planning. To develop standards for assessing the social impact of transportation systems. E. Iverson. HRIS 15-110682 COMPLETE

(3) Impact of Highway Improvements on Property Values. Analysis of land use categories to provide predictive tools for determining potential impact of highways on property values, prior to construction. E. A. Iverson, R. Palmquist, L. Peterson. HRIS 15-157080 ACTIVE

(4) Biodegradable Vegetative Containers. To grow vegetative covers and trees in such containers and plant them on rights-of-way and determine relative effectiveness of the containers on plant survival and growth. R. Rosenthal. HRIS 23-157075 ACTIVE

(5) Pavement Management Systems. To determine the feasibility of applying a pavement management system to assist in planning and programming highway improvements. R. J. LeClerc. HRIS 24-136079 ACTIVE

c. Washington State University: Pullman, 99163

(1) Evaluation of Public Transportation Policies Affecting Agriculture. To assess the economic performance of the general-purpose transportation system for agriculture and the effect on efficiency and equity of proposed adjustments in services and rates. K. L. Casavant. HRIS 15-099645 (Citations) ACTIVE

(2) Chemical Weed Control in Ornamentals on Highways Right-of-Way. To determine methods of eliminating weeds and preventing weed infestation without injuring desirable plantings. G. F. Ryan, R.N. Rosenthal, R.L. Berger. HRIS 23-082580 ACTIVE

(3) Development of Plant Indicators of Slope Instability. To determine the extent to which vegetation can be used as an indicator of mass instability on slopes. D. R. Satterlund. HRIS 23-157077 COMPLETE

47. WASHINGTON (contd)

d. University of Washington: Olympia. 98501

(1) Drawspan Maintenance on the Evergreen Point Bridge. Study of the strains on the floating bridge span mechanism, including effects of wind. Brown. HRIS 25-193232 ACTIVE

e. University of Washington: Seattle, 98195

(1) Expanding Use of an On-board Origin-Destination Survey. To determine the potential utility of an on-board transit O/D study in short range transit planning and test whether an on-line interactive spatial analysis and display system could enhance the use of such a data base. C. D. Gehner. HRIS 12-193233 (Citations) COMPLETE

(2) Aerosol Optical Effects. To develop measuring methods to relate optical aerosol effects to particle properties. A. P. Waggoner. HRIS 17-193230 (Citations) ACTIVE

(3) Combination of Aerial and Terrestrial Photogrammetry for Monitoring the Deformation of Structures. To combine aerial and terrestrial photogrammetry to monitor engineering structures, such as dams, walls, bridges, etc. S.A. Veress, M. C. Y. Hou. HRIS 21-178007 ACTIVE

(4) Runoff Water Quality. To qualify and quantify the character and significance of runoff water for different traffic conditions, distinguishing between road surface runoff and that from adjacent right-of-way. B. Mar. HRIS 22-157082 ACTIVE

(5) The Feasibility of Implementing a Continuous Simulation Hydrographic Model for Urban Drainage System Design. S. J. Burges. HRIS 22-193234 ACTIVE

(6) Waste Water Handling, Holding and Disposal. To determine the feasibility of alternatives for reducing waste water problems on ferry boats, and evaluate for benefits and costs. J. F. Ferguson. HRIS 23-136083 ACTIVE

(7) Acoustic Barrier Research. Laboratory modeling and full scale fixed noise studies to investigate noise definition and attenutation, to be followed by measurements on vehicles. Foss. HRIS 23-193228 ACTIVE

(8) Pavement Wear Related to Highway Run-off. To correlate particulate matter in runoff water with pavement wear. R.L. Terrel. HRIS 24-193238 INACTIVE

(9) Utilization of Sulphur in Pavements. Development of feasibility and economics of using waste sulphur in pavements, in Saudi Arabia. R.L. Terrel. HRIS 34-193241 ACTIVE

(10) Mortarless Block Construction. To develop methods and materials design for wall construction without mortar. R.L. Terrel. HRIS 34-193236 (Citations) ACTIVE

(11) Alternate Methods of Avalanche Control. To evaluate several methods of on-site triggering of avalanche release that are safe, non-destructive and can be initiated by remote control. Lachapelle. HRIS 40-193231 ACTIVE

k. Washington State Nurserymens Association: Olympia, 98504

(1) Native Vegetation Development. To develop new methods of plant propagation to insure survivability of native vegetative materials used for landscaping. R. Rosenthal. HRIS 23-101185 ACTIVE

47. WASHINGTON (contd)

l. Battelle Memorial Institute, Pacific Northwest Laboratories: Battelle Boulevard,
P. O. Box 999, Richland, 99352

(1) Study of Radioactive Material Transport Problems, 1976-2000. To examine the future transportation systems, trends, and problems associated with transport of nuclear fuel cycle materials, petroleum, coal and natural gas. J. G. DeSteese. HRIS 51-136085 (Citations) ACTIVE

o. Holosonics, Incorporated: 2950 George Washington Way, Richland, 99352

(1) Scanned Acoustical Holography for Geologic Prediction. To install an Acoustical Holography inspection system on a tunneling machine to observe the geologic and rock conditions some 30 to 100, feet ahead of the machine. T. O. Price. HRIS 61-138478 (Citations) ACTIVE

r. Ilium Associates, Incorporated, 87 Wass Street, Seattle, 98121

(1) Study of the Improvement of Off Peak Ridership and Revenue. A study of ways and means to promote greater ridership during off-peak hours. HRIS 11-059211 ACTIVE

(2) Transit Marketing Research Study for Corpus Christi Area. To gather data identifying transit and travel attitudes of Corpus Christi transit market segments and develop a market plan and implementation schedule. M. Hughes. HRIS 12-178005 (Citations) ACTIVE

48. WEST VIRGINIA

a. West Virginia Department of Highways: 1900 Washington Street, East, Charleston, 25305

(1) Serviceability Evaluation of Local Service and Feeder Roads. Develop a method for systematic evaluation in determining type and degree of rehabilitation required to provide serviceable local and feeder roads, and prepare a manual for this work. D. Long. HRIS 24-193248 FUTURE

(2) Study to Refine Methods and Procedures for Implementating Field Use of Large Scale Pycnometer for Rapid Determination of Asphalt Content of Paving Mixtures. To improve the operational characteristics of this instrument, and develop a field procedure manual. S. Hudson, J. O'Leary, F.T. Higgins. HRIS 31-103644 ACTIVE

(3) Experimental Skid Resistant Bituminous Surfaces. To design bituminous mixtures that have and retain a friction index with respect to expected centrifugal and deceleration forces on wet pavements. O'Leary. HRIS 31-082593 ACTIVE

(4) Bituminous Concrete Plant Dust Collection System - Effects of Using Recovered Dust in the Paving Mix. Determine characteristics of dust collected and whether it can be used benefically in the mix. J. O'Leary, R. Ward. HRIS 31-178009 FUTURE

(5) Study to Refine Methods and Procedures for Implementing the Method of Early Prediction of Potential Strength of Portland Cement Concrete. To predict more rapidly, under field conditions, the potential strength of pcc. S. Hudson, J. O'Leary, F.T. Higgins. HRIS 32-104301 ACTIVE

(6) Determination of Statistical Parameters for Highway Construction. To determine numerical acceptance limits based on statistical concepts, considering variations in material characteristics produced under practical job controls. Higgins. HRIS 33-104606 ACTIVE

(7) Determination of Statistical Parameters for Highway Construction Continuation II. To develop project statistical specifications based on earlier works. F.J. Bowery, F. T. Higgins, S. B. Hudson. HRIS 33-104596 ACTIVE

48. WEST VIRGINIA (contd)

a. (8) Paint Performance in Relation to Air Quality. To periodically evaluate paint test panels exposed to heavy industrial chemical fallout and evaluate new coating systems. J. O'Leary. HRIS 34-105095 ACTIVE

(9) Durability of Coatings Applied to Steel Structures. To provide training for inspectors of steel painting and develop an inspection manual. J. O'Leary, W. Shuler. HRIS 34-178010 FUTURE

(10) Development of an Equipment Management System. To develop a management system relating to all phases of operations within an equipment division. D. Walker, D. A. Porter. HRIS 41-136088 ACTIVE

(11) Grade Crossing Passive Signing Demonstration Project. To provide services and material for manufacturing and installing signs. R. Titus. HRIS 54-036358 ACTIVE

(12) Classification of Shales for Embankment Construction. To develop a simple field test for determining suitability of shales for constructing embankments. B. Thompson. HRIS 61-193244 FUTURE

d. University of West Virginia: Morgantown, 26505

(1) West Virginia Coal Transportation. To develop and maintain a data base describing and quantifying the elements of coal transportation network and build a simulation model. S. E. G. Elias. HRIS 11-178014 ACTIVE

(2) Morgantown West Virginia University Personal Rapid Transit System. A study of the development, utilization, and evaluation of a personal rapid transit system. S. E. Elias. HRIS 12-111069 COMPLETE

(3) Start-up Operation of Morgantown Personal Rapid Transit System Phase I and A&E Design of Phase II. To start the system operating, train staff, measure compliance with design concepts, and complete A&E design of Phase II. E. G. Elias. HRIS 12-136089 COMPLETE

(4) Morgantown Personal Rapid Transit System Impact Evaluation Phase I. To measure service and accessibility, nature of patrongage, operational costs and revenues, public attitudes towards the system, and its impact on travel, traffic, the economy and environment. S. G. Elias. HRIS 12-058375 (Citations) INACTIVE

(5) Feasibility of Developing Low-Cost Measures of Demand for Public Transportation in Rural Areas. To develop a data base of key socio-economic, highway network and geographic variables which can be used to estimate latent demand along possible rural transit routes. E.S. Neumann. HRIS 12-058831 COMPLETE

(6) Morgantown Personal Rapid Transit Impact Valuation: Post PRT Impact Study. Collection of data and analysis of passenger movements and traffic flow during the passenger operation of the PRT system. S.E. G.Elias. HRIS 12-157088 COMPLETE

(7) Study of Traffic and Transportation Conditions Adjacent to the Morgantown Transportation System. A study of other transportation in the corridor. S.E. G. Elias. HRIS 12-193253 ACTIVE

(8) Feasibility Study for Coupling on the Morgantown People Mover. To examine the feasibility of coupling vehicles on the Morgantown PRT System. S.E. G. Elias. HRIS 12-193251 ACTIVE

(9) Evaluation of Environmental Factors Related to Fly Ash Utilization and Disposal. To determine the quality and quantity of leachate and runoff from fly ash disposal structural fills. R.K. Seals, W.A. Sack. HRIS 17-193250 ACTIVE

48. WEST VIRGINIA (contd)

d. (10) Development of Warrants for the Use and Location of Truck Escape Ramps. To develop warrants for these ramps and a methodology for determining appropriate locations. R.W. Eck. HRIS 21-178011 ACTIVE

(11) Scour Around Bridge Piers. To determine the characteristics and magnitude of scour at bridge piers under various storm and other conditions causing scour. Hopkins. HRIS 22-020617 ACTIVE

(12) Use of Different Roadside Cover Plantings by Wildlife. To determine the relative attractiveness of different right-of-way cover plantings to various species of wildlife. E.D. Michael. HRIS 23-193255 ACTIVE

(13) Tolerable Movement Criteria for Highway Bridges. To establish a practical limit to the foundation movement that can be tolerated without serious distress to various types of highway bridge structures. H.V.S. GangaRao. L.K. Moulton. M.K. Tadros. HRIS 25-193254 ACTIVE

(14) Design and Performance of Steel Grids for Bridge Decks - Phase I Feasibility Study. Study of the use of steel grids as bridge decks. and develop design aids for their utilization. H. V.S. GangaRao. HRIS 25-193249 ACTIVE

(15) Development of a Standard Short Span Bridge System. To develop one or more standardized systems of constructing short span bridges to replace deteriorated bridges. H.V.S. GangaRao. HRIS 25-103014 (Citations) ACTIVE

(16) State of Technology for Quality Assurance of Plastic Concrete. To investigate the feasibility of determining the quality of portland cement concrete upon completion of mixing and prior tc initial set. W.J. Head. HRIS 32-178012 FUTURE

(17) Investigation of the Use of Coal Refuse/Fly Ash Compositions as Highway Base Course Materials. An investigation of this mixture as highway base course material W. J. Head. HRIS 34-178013 ACTIVE

(18) Field and Laboratory Testing of Power Plant Ash. To test plant ashes and ash mixtures to predict and/or evaluate their performance in pavement or embankment systems. R. K. Seals. HRIS 34-178015 (Citations) ACTIVE

(19) Field Study of Fly Ash Construction. A study of field behavior of fly ash embankments and stabilized base courses to provide data needed for design and construction. R. K. Seals. HRIS 62-082592 (Citations) ACTIVE

(20) In-situ Determination of Permeability of Base and Subbase Courses. To develop suitable apparatus and procedures for determining the permeability of granular materials. L. K. Moulton, R. K. Seals. HRIS 62-157086 (Citations) ACTIVE

e. West Virginia Institute of Technology: Montgomery, 25136

(1) Cooling Characteristics of Asphalt Mixes. To study the rate of cooling in mixtures normally used in pavement and its effect on compaction, and establish improved criteria for better quality control. S. A. Swami. HRIS 31-157083 FUTURE

f. Woodward Gardner and Associates: Charleston 25305

(1) Model of a Qualtiy Assurance Acceptance Plan. To optimize end result specifications based on statistical concepts. Hudson. HRIS 33-157087 ACTIVE

49. WISCONSIN

a. Wisconsin Department of Transportation: P. O. Box 7916, Madison, 53707

(1) Analytical Triangulation Research. To determine practical methods of improving the accuracies and economics of photogrammetric surveys through analytical triangulation techniques. R. H. Holdridge. HRIS 21-178019 (Citations) ACTIVE

(2) Portland Cement Concrete Pavement Joint and Sealant Performance. Comparison of various sealed and unsealed joint systems in pcc pavements; compare the cost and efficiency of the systems involved; compare the performance of the pavements using these various sealing systems, all with varying joint spacings. K. H. Dunn, S. F. Shober, HRIS 24-082588 (Citations) ACTIVE

(3) Modified Dowel Bar Evaluation. To evaluate the relative performance of plain pcc pavements with regular sized dowels, modified dowels and no dowels at contraction joints. F. R. Ross. HRIS 24-157093 ACTIVE

(4) Evaluation of Plain Concrete Pavements. Study of vertical and horizontal movements, plus pavement and joint conditions, in pavements constructed without reinforcing or load transfer devices. K. H. Dunn, S. F. Shober. HRIS 24-102055 (Citations) ACTIVE

(5) Evaluation of Methods of Reducing Reflection Cracking in Bituminous Overlays. Investigation of several applications of fabric materials for control of this cracking. T. J. Maryinelli. HRIS 24-193258 ACTIVE

(6) Condition of the Reinforcing Steel in Continuously Reinforced Concrete. To determine the effect of infiltrated water and brine on the steel and establish a performance history of the cracking. K. Dunn. HRIS 24-101973 (Citations) ACTIVE

(7) Curing of Joints in PCC Pavements. To determine if joint curing is necessary, and if a cheaper method than polyethylene tape would suffice. F. R. Ross. HRIS 32-178018 ACTIVE

(8) Chloride Ion Content of PCC and Concrete Aggregates not Exposed to Deicing Salts. Determination of soluble and bonded Cl in various aggregates, and source and properties of concrete made therefrom inventoried. Dunn. HRIS 32-193257 ACTIVE

(9) Value Engineering Analysis of Bridge Maintenance. To optimize expenditure of maintenance resources through an indepth study of bridge maintenance operations. Fiottmeyer. HRIS 40-178017 COMPLETE

(10) Salt Effect on Soil and Water. To evaluate the effect of winter maintenance salting on the natural environment adjacent to the highway. C. N. Laughter. HRIS 40-105654 (Citations) ACTIVE

(11) Reflective Sheeting Photometer Test. To determine the initial reflective intensities for brands, grades and colors of this sheeting, the time-loss of reflective intensities, and the cold cracking propensities of it. S. F. Shober. HRIS 54-157095 ACTIVE

d. University of Wisconsin: Madison, 53706

(1) Union-Management Programs in Urban Transit. To provide a forum for union and management representatives to discuss and resolve problems. J. L. Stern. HRIS 11-193262 (Citations) ACTIVE

(2) Flywheel Energy Management Powerplant System Evaluation. To test the flywheel hybrid vehicle for fuel economy and emissions. A. Franck, N. Beachley. HRIS 12-178022 ACTIVE

49. WISCONSIN (contd)

d. (3) Rate Structure and Regulatory Barriers Affecting Transportation of Wisconsin Livestock and Meat. Analysis of transportation systems and techniques, rate structures, transportation barriers, regulation as they affect the livestock and meat industry. R. H. Vilstrup. HRIS 15-195922 ACTIVE

(4) Evaluation of Alternative Rural Freight Transportation Storage and Distribution Systems. To estimate the optimal rural freight transportation, storage and distribution system, the economic effects of alternative railroad ownership and financial policies, and the economic effects of alternative governmental policies on carriers, shippers and receivers and rural communities. R.H. Vilstrup. HRIS 15-157092 ACTIVE

(5) Assessing the Impact on Rural Communities of Urbanization Policies using Game Simulation. To explore alternative forms of organizations of urbanizing rural regions, develop policies and plans for new community development and explore gaming simulation as a tool for testing implications and effectiveness of policy decisions. J. L. Noore. HRIS 15-136091 ACTIVE

(6) Tolerance of Plant Species to Deicing Chemicals used on Highways and Streets. To combat the loss of roadside cover being destroyed by deicing materials and find suitable plant material. L. J. Greub. HRIS 23-083574 (Citations) ACTIVE

(7) Native Vegetation Restoration. A study of methods of propagating, establishing and managing native vegetation for use in landscaping. D. G. Morrison. HRIS 23-157094 ACTIVE

(8) Protection of Wood in Use. Modify and develop procedures for imparting a high resistance to wood against biological degradation and weathering action. W.C. Feist, L.R. Gjovik, B.R. Johnson, R.M. Rowell. HRIS 34-136093 (Citations) ACTIVE

(9) Statistical Analysis of Crash Conditions and Their Relationship to Injuries. To improve understanding and knowledge of relationship between crash kinematics and occupant injury by systems analysis of accident data files. HRIS 51-160219 ACTIVE

(10) Services for Problem Drinking Drivers. As a part of the Alcohol Safety Action Program to expand to provide more extensive community services. P. Desantis, F. A. Wileman. HRIS 52-136097 ACTIVE

(11) Statistical Analysis to Determine Impact of Catalyst-Equipped Autos in the Environment Near a Los Angeles Freeway. To study the effects on pollutant concentrations of the catalytic converter on automobiles. G. C. Tiao, S. Hillmer, M. Phadke. HRIS 53-179586 ACTIVE

(12) Pollutant Formation from Combustion Sources. To train graduate students in the general field of engines and pollution, and the fundamentals of pollutant formation during combustion. P.S. Meyers. HRIS 53-136092 COMPLETE

(13) A Sampling Investigation of NOx Gas Formation in a Diesel Engine. To correlate and Construct a history of the NOx formation in a diesel engine and the relationship between the formation process and the other engine combustion processes. P. Meyers, G. J. Borman, D. A. Ugehorg. HRIS 53-136096 ACTIVE

(14) Emission Formation in Heterogeneous Combustion. To provide trained manpower fundamental information about pollutant formation in engines and ways of reducing these pollutants. G. L. Borman, P.S. Myers, O.A. Ugehava. HRIS 53-136104 ACTIVE

(15) Relating Soil and Landscape Characteristics to Land Use. To develop a quantitative scheme to rate soils for specific land uses and guidelines to determine the suitability of soils for installation of septic systems. F.D. Hole. HRIS 61-193261 ACTIVE

49. WISCONSIN (contd)

d. (16) Soil Moisture Equilibria and Behavior of Highway Pavement Systems. To establish the relationship between strength and deformation characteristics under highway loading conditions and the soil moisture regime in terms of soil-water potential. T. B. Edil. HRIS 64-136095 (Citations) COMPLETE

e. Globe-Union Incorporated: 5757 North Green Bay Avenue, Milwaukee. 53201

(1) Applied Research Relating to Lead-Acid Batteries (Automotive and Industrial). To increase the life, energy density and power density capabilities of the lead-acid storage battery and to reduce its cost. G. Goodman. HRIS 53-107446 ACTIVE

i. University of Wisconsin: Milwaukee, 53201

(1) Analysis of Effects of Parking Rate Changes on Usage Pattern. A before and after study of the effects of an increase in long-term parking rates on the usage of a parking facility. W. Sovinski. HRIS 15-193263 ACTIVE

(2) Prediction of Public Response to Prospective Transportation Policies Based upon Stated Intention. To develop techniques for prediction of traveler response to economic and regulatory changes in the transportation system. D. Gensch, J. Svestka, E. Beimborn. HRIS 16-193265 ACTIVE

(3) Innovative Approaches to Energy Conservation at Major Trip Generators. To develop energy savings through the use of alternative means of transportation to major trip generators. D. Cyra, R. Schmitt, E. Beimborn. HRIS 17-193264 ACTIVE

50. WYOMING

a. Wyoming State Highway Department: P. O. Box 1708, Cheyenne. 82001

(1) Implementation of a New Yielding Sign Support Structure. Field testing a new sign support as replacement for more expensive unit. G. Dale. HRIS 21-157101 ACTIVE

(2) Computer Programming to Implement Results of Inflow-Hydrodraph Research Project. To write a computer program based on results of the Inflow Hydrograph Study performed by the U. S. Geological Survey. D. Glandt. HRIS 22-157097 ACTIVE

(3) Sawmill Residues for Highway Mulching. To evaluate and compare wood residue mulch to straw mulch. Sims. HRIS 23-193268 ACTIVE

(4) Implementation and Operation of Fatality Analysis File. To establish a research oriented file in support of the Alcohol Countermeasures Program and a means of evaluating that program. H. Stumpf. HRIS 51-038661 ACTIVE

(5) Electro-Osmotic Stabilization of Soils. Utilization of natural electric energy created by water saturated clay particles in the soil to remove water from the system by electro-osmosis. Sherman. HRIS 62-157099 INACTIVE

b. University of Wyoming: Laramie, 82071

(1) Cost of Truck Transportation of Wyoming Agricultural Commodities. To determine costs and charges for truck transportation and possibilities of reducing these costs and improving service. J.S. St. Clair, A. Vanvig. HRIS 15-195925 ACTIVE

(2) Effects of Multiple Land Use Practices on Big Game Habitat and Behavior in the Central, Rocky Mountains. Determine the environmental impacts and interrelationships of major land use practices on the spectrum of habitats essential for elk and other big game populations, and patterns of elk behavior and movement following harvest and activities related to increased human ingress. A. L. Ward, HRIS 23-138435 (Citations) ACTIVE

50. WYOMING (contd)

b. (3) Inclement Weather Engineering: Bridge Thermodynamics, Bridge Deicing, Laser Measurement of Blowing Snow. Examination of several bridges for freeze-thaw cycles, measurement of blowing snow and bridge design. K. M. Pell, J. E. Nydahl. HRIS 25-157102 (Citations) ACTIVE

(4) Properties of Asphalts Derived from Coal Liquifaction. E. Wilson, Lamb, P. Hoyt. HRIS 31-157104 ACTIVE

(5) Properties of Reclaimed Asphalts. To find these properties. E. Wilson, Lamb, P. Hoyt. HRIS 31-157105 ACTIVE

(6) Geo-thermal Bridge Deck Heating. Study of the use of integral heat pipes in a section of a bridge. K. M. Pell. HRIS 40-193269 (Citations) ACTIVE

51. DISTRICT OF COLUMBIA

a. District of Columbia Department of Transportation: 415 12th Street, N.W., 20004

(1) Longitudinal Cracking in Flexible Pavement Wheel Paths. To determine the cause of this cracking in high-type flexible pavements. Liu. HRIS 24-192636 ACTIVE

(2) Premium Pavement Study. To develop an economic analysis of the 10-inch portland cement concrete base pavement in terms of whether or not its use increases pavement life and reduces total maintenance costs enough to offset initial costs. R. A. Allen, HRIS 24-192602 FUTURE

(3) Utilization of the District of Columbia's Incinerator Residue in Highway Construction. Laboratory and field investigations of the use of this residue in bituminous concrete mix designs. Martin. HRIS 34-153643 ACTIVE

g. American Public Transit Association: 1100 17th Street, N.W. 20036

(1) Assured Energy Receptivity. A study of ways in which electrical energy can be saved in the operation of subway systems, as related to the use of energy to remove heat from tunnels, one way being to use regenerative braking to put power back into the system, and thus decrease the input of power. HRIS 17-082033 INACTIVE

(2) Development of Standard Concrete Tie Specifications. To develop specifications for a cost effective, quality-assured, reliability designed concrete tie. HRIS 34-082032 INACTIVE

(3) Safety and System Assurance. Development and dissemination of safety plans for rail, light rail, and bus transit safety. HRIS 51-170780 ACTIVE

(4) Bus Technology Support. To provide industry input to UMTA on Advanced Design Bus and Transbus. HRIS 53-178024 ACTIVE

l. National Committee on Uniform Traffic Laws and Ordinances: 1776 Massachusetts Ave., N.W. 20036

(1) Differences among Traffic Laws in the United States. Commentary on the latest rules of the road laws enacted by the states, as compared with the Uniform Vehicle Code. HRIS 70-153585 ACTIVE

(2) Extent of Uniformity or Nonuniformity among the Traffic Ordinances of the Hundred Largest Cities in the U. S. A comparison of these ordinances with the provisions of the Uniform Vehicle Code and the Model Traffic Ordinance. HRIS 70-153590 ACTIVE

(3) Homicide by Vehicles. Comparison of state laws on homicide by vehicles with the Uniform Vehicle Code. HRIS 70-153594 ACTIVE

51. DISTRICT OF COLUMBIA (contd)

l. (4) Issuance of Probationary Licenses to Minors. Comparison of state laws with the provisions of the Uniform Vehicle Code. HRIS 70-153595 ACTIVE

(5) Penalties for Traffic Violations in the U.S. Comparison of state laws with the provisions of the Uniform Vehicle Code. HRIS 70-153587 ACTIVE

(6) Point System Comparison of Related Violations. Comparison of state laws with the provisions of the Uniform Vehicle Code. HRIS 70-153593 ACTIVE

(7) Rules of the Road Rated. A rating of state laws in effect as of December 31, 1976, as compared with the Uniform Vehicle Code. HRIS 70-153591 ACTIVE

(8) Suspension of Licenses for Failure to Appear in Court. Comparison of state laws with the provisions of the Uniform Vehicle Code. HRIS 70-153592 ACTIVE

m. National Crushed Stone Association: 1415 Elliot Place, N.W., 20007

(1) Effects of Aggregates on Structural Properties of Bituminous Mixtures. An evaluation of the effects of aggregate size, shape and type on the dynamic properties of mixes. U. V. Kalcheff. HRIS 31-103609 ACTIVE

(2) Soil Stabilization with Crushed Stone Products. To determine the relative effectiveness of different crushed stone products in mechanical stabilization of weak subgrade soils. I. V. Kalcheff. HRIS 35-105381 INACTIVE

(3) Specimen Preparation for Laboratory Evaluation of Engineering Properties of Granular Materials. To evaluate laboratory consolidation techniques and methods for preparation of test specimens from granular materials. I. V. Kalcheff. HRIS 35-105380 ACTIVE

q. Pan American Health Organization: 525 23rd Street, N. W., 20037

(1) Epidemiology of Alcoholism in Latin America. To determine the prevalence of alcoholism and heavy drinking in urban areas and define relationships to type of beverage, age, sex and cultural variables. M. Katasky, C.L. Williams, R. Gonzalez. HRIS 52-107395 COMPLETE

r. Peat, Marwick, Mitchell and Company: 1025 Connecticut Avenue, N.W., 20036

(1) Technical Activities in Support of UMTA Program Evaluation Activities. To assist in the evaluation of transportation progress and developing guidelines and standards for transit services and operating efficiency. HRIS 11-160407 ACTIVE

(2) Urban Transit Plan Evaluation. To compile and condense materials and results of the transportation planning process, and determine community response to the Transportation Improvements Program. HRIS 11-059246 ACTIVE

(3) Analysis of Transportation Demand in Selected Chicago City Pairs. A study of private automobile travel in connection with a CAB proceeding related to the Chicago-Midway Low-Fare Route Proceeding. HRIS 11-160394 ACTIVE

y. Urban Institute: 2100 M Street, N.W., 20037

(1) Continuing Study of the Impacts of Short-Range Transit Improvements. Studies of the consequences and impacts of short-range improvement policies on ridership, revenues, costs, fare changes, etc. M. A. Kemp, K. Goodman, D.F.W. Ernst, K. M. Green, R. F. Kirby, R.G. McGillivray. HRIS 12-082035 (Citations) ACTIVE

51. DISTRICT OF COLUMBIA (contd)

y. (2) Implementation of Congestion Pricing. A study of the practical problems and results of implementing a congestion pricing demonstration. K. U. Bhatt, M. Cheslow, M. L. Olsson. HRIS 12-082030 (Citations) ACTIVE

(3) Inventory of Public Transportation Services in Small Urban Areas. To inventory these services in and providers for all non-urbanized places with populations between 25,000 and 50,000 and a sample of such places between 10,000 and 25,000 with some special attention given to services for such groups as elderly and handicapped. R. F. Kirby, M. A. Green. HRIS 12-153622 (Citations) ACTIVE

(4) User-Side Subsidies. To test a user-side subsidy mechanism as an alternative for handicapped and elderly-oriented public transportation. R. G. McGillivray, R. F. Kirby, F. Tolson. HRIS 12-082031 (Citations) ACTIVE

(5) Paratransit. To provide technical assistance to UMTA in the establishment of paratransit demonstration projects. R. F. Kirby, G. Miller, F. L. Tolson. HRIS 12-192603 (Citations) ACTIVE

(6) Mobility Issues Related to a Technology Assessment of the Automobile. To provide initial guidance to the Office of Technology Assessment of the U.S. Congress for one of six general areas of technology assessment of the automobile. M. D. Cheslow, G. K. Miller. HRIS 12-153624 ACTIVE

(7) Methods for the Estimation of Transportation Systems Cost. To develop an effective evaluation framework for the alternative analysis process for estimating costs of transportation alternatives. K. U. Bhatt, M. Cheslow. HRIS 13-192604 (Citations) ACTIVE

(8) Alternative Approaches to the Evaluation of the Impacts of New Rail Rapid Transit Systems. To identify and quantify conditions in urban areas which are appropriately attributable to the new rail transit operations. U. F. W. Ernst. HRIS 15-160449 ACTIVE

ac. American Association of Motor Vehicle Administrators: 1201 Connecticut Ave., N.W. 20014

(1) American National Standards Instituted - 20 Committee States Model Motorist Data Base. To develop automated data processing in the areas of registrations, ownership, driver licensing, vehicle inspection, highway safety accident statistics, etc. K. D. Hackman, Jr. HRIS 11-177675 (Citations) ACTIVE

ad. American Institute for Research: 1055 Thomas Jefferson Street, N.W., 20007

(1) Predicting AGT System Station Security Requirement. To furnish technical and professional assistance in developing prediction techniques designed to control crime on mass transit systems. W. V. Rouse, J. Botts. HRIS 51-178023 ACTIVE

af. DeLeuw, Cather and Company: 1201 Connecticut Ave., N. W. 20036

(1) Assessment of the Inclined Elevators used in Stockholm, Sweden. To serve as a basis for judgement of the feasibility of inclined elevator applications in U. S. mass transit systems. T. Hansen. HRIS 12-059880 (Citations) COMPLETE

aj. Institute for Safety Analysis: 6400 Goldsboro Road, 20034

(1) Evaluation of the State-of-the-Art of Commercial Truck Exposure Estimation. To conduct a symposium bringing together operators, manufacturers, researchers, highway personnel and others interested in truck exposure at national, state and local levels. M. L. Reiss. HRIS 55-192623 (Citations) ACTIVE

as. National Academy of Sciences: 2101 Constitution Ave., N. W. 20418

(1) BART Impact Program. To review and provide consultation on various technical and management aspects of the BART Impact Program. HRIS 15-059496 COMPLETE

51. DISTRICT OF COLUMBIA (contd)

as. (2) The U.S. National Committee on Tunneling Technology. To assess the broad range of activities and related technologies pertaining to the use of subsurface space and to stimulate improvements in underground construction technology. R. L. Bangert. HRIS 21-136152 ACTIVE

(3) U. S. National Committee for Rock Mechanics. To review new developments and trends in rock mechanics, and disseminate information on research and technical activities. R. L. Bangert. HRIS 63-136165 ACTIVE

at. Environmental Law Institute: 1346 Connecticut Avenue, N.W. 20036

(1) Feasibility Study of Share-Ride Auto Transit. To conduct the study of a concept known as shared-ride auto transit (SRAT), which would allow licensed individual commuters to use their own vehicles and carry riders for specified fees along his route. G. A. Kocur. HRIS 12-153614 (Citations) COMPLETE

az. Lawrence Johnson and Associates, Incorporated: 2001 S Street, N.W. 20009

(1) Exemplary Programs Involving the Use of School Buses. To identify exemplary transportation safety activities involving the use of school buses which meet established criteria HRIS 55-160369 ACTIVE

aw. Washington Metropolitan Area Transit Authority: 600 5th Street, N.W. 20001

(1) Computer Assisted Information System on Transit Schedules, Routes and Fares. To develop an information system that will respond more effectively to telephone requests for information. J. Warrington. HRIS 11-059866 ACTIVE

ba. Systems Design Concepts, Incorporated: Suite 200, 1634 I Street, N.W. 20006

(1) Develop Procedures for Evaluating Urban Transportation System Alternatives. To develop these evaluating procedures. HRIS 11-160242 (Citations) COMPLETE

(2) Institutional and Planning Research for Transportation System Management. To isolate institutional mechanisms and planning procedures that have been effective in implementing TSM, unify existing information, and identify innovative approaches. HRIS 11-160078 (Citations) COMPLETE

(3) Transit Energy Study. To study the energy impacts of various transit improvements and operating policies. J. R. Stowers. HRIS 17-192640 ACTIVE

bb. District of Columbia Department of Human Resources: 14th and E Streets, N.W., 20005

(1) Implementation of a Medical Emergency Coordination Communications Assessment (MECCA) System for the District of Columbia. To provide communication links between air ambulances, military hospitals, medical specialists, hospitals and emergency departments within the District as well as into the adjacent jurisdictions of Northern Virginia and Maryland. S. J. Flores. HRIS 51-058801 ACTIVE

bc. University of the District of Columbia: 1331 H Street, N.W., 20005

(1) Evaluation of Asphalt Overlays as a Noise Abatement Measure on Low Speed Roadways. To investigate the effectiveness of asphalt overlays in reducing tire noise from rough or worn pavements. J. Ross. HRIS 24-192631 ACTIVE

be. American Association of State Highway and Transportation Officials: 444 North Capitol Street, N. W. 20001

(1) Materials Development of Uniform Guidelines. To develop uniformity in and implementation of specific policies and procedures in motor vehicle administration, such as registration, inspection, driver licensing, etc. HRIS 51-160033 ACTIVE

51. DISTRICT OF COLUMBIA (contd)

bf. Bureau of Social Science Research Incorporated: 1990 M. Street, N.W., 20036

(1) Occupational Adjustment of Recent Low-Income Southern Immigrants to Cleveland. Comparison of the occupational adjustment of those having been in Cleveland less than five years with those with at least ten years residence. L. M. Sharp. HRIS 15-110571 (Citations) COMPLETE

bg. Gladstone Associates: 2030 M Street, N. W. 20036

(1) Prepare a Casebook on Joint Development Practices. Applied research and documentation of prominent joint development projects and promising "best practices" in the U.S. and Canada, with transportation emphasis. R. Witherspoon. HRIS 12-192599 (Citations) ACTIVE

(2) Alternative Means of Financing Mass Transportation Systems. To review and evaluate innovative financing techniques for transit, many of which entail joint development or the concept of value capture. R. Witherspoon. HRIS 14-192598 (Citations) COMPLETE

(3) Provide Detailed Information and Analysis Relating to Development of Transitways. Analysis of retail, office and related markets, and estimate of impacts on the downtown economy of proposed Transitway/Mall, as part of preparing a feasible plan for implementing the project in Denver, Colorado. R. Witherspoon. HRIS 15-192600 (Citations) COMPLETE

bh. Hammer Siler George Associates: 1140 Connecticut Avenue, N.W. 20036

(1) Detroit Transit Analysis. To forecast economic development by type of land use for each of seven mass transit alternatives. D. C. Slater. HRIS 13-192639 (Citations) ACTIVE

bi. National Institute for Community Development/SBA. Washington, D.C. 20417

(1) Census Data in Urban Transportation. To develop data and a users guide for utilizing this data in urban transportation planning. E. T. Herlihy. HRIS 11-160396 ACTIVE

bj. One America, Incorporated: 1750 Pennsylvania Avenue, N. W., 20006

(1) Study of the Impact of the Office of University Research's Minority Program. To determine the impact to date and what further technical and administrative assistance must be developed. HRIS 90-160298 ACTIVE

52. PUERTO RICO

a. Puerto Rico Highway Authority: G.P.O. Box 3909, San Juan, 00936

(1) Evaluation of Existing Overpass Pedestrian Facilities. An evaluation of some typical overpasses to determine factors to be considered in determining need for facilities in the future. E. Castillo. HRIS 21-178049 ACTIVE

(2) Pavement Research: Evaluation of Design Parameters in Puerto Rico. To determine cause of early deterioration and adapt corrective procedures, and reduce need for overlays and heavy maintenance. G. Mejias. HRIS 24-193272 FUTURE

(3) Implementation of Earthwork Compaction Control Family of Curves Method for Puerto Rico Soils. To implement these curves and simplify earthwork compaction control procedures. G. Mejias. HRIS 33-193271 ACTIVE

52. PUERTO RICO (contd)

c. University of Puerto Rico: Mayaguez, 00708

(1) Transportation Needs of the Elderly and Handicapped Persons in the San Juan Metropolitan Area. To determine needs and design a system to serve those needs. J. A. Amador, A. Calderon, R. Garcia-Pacheco. HRIS 12-178052 COMPLETE

(2) Measuring Productivity in Bus Transit Operations. To develop measures of operational productivity in bus transit systems to serve as standards for improving productivity. L. A. Martin, R. Garcia-Pacheco. HRIS 16-193274 ACTIVE

(3) Preliminary Study of Breakaway Luminaire Supports for use in Puerto Rico. To design a low-cost safe support for highway use. R. Jimenez. HRIS 21-193275 ACTIVE

(4) Evaluation of Skid Resistance Characteristics of Aggregates used for Highway Construction. Evaluation of aggregates from 55 quarries for their polish resistance and other characteristics with reference to use in surface courses of asphalt pavements. P. M. Gandhi, R. Garcia-Pacheco. HRIS 35-178051 COMPLETE

(5) Optimizing Mechanical Harvesting Systems. To determine optimum field machinery requirements and work schedules for mechanical harvesting and transporting sugar cane. T. S. Chisholm. HRIS 53-083550 (Citations) ACTIVE

(6) Earthwork Compaction Control in Puerto Rico: Family of Curves Method. To implement these curves and simplify earthwork compaction control procedures. M. Wegrzyn, J.A. Ramos, R. Garcia-Pacheco. HRIS 64-178050 COMPLETE

YUGOSLAVIA

Resurvey - 1980

The 1980 resurvey of Yugoslavia was conducted through the cooperation of the IRRD. A total of 124 projects are included, 34 of them for the first time. Of the total, 47 are shown to be complete. Project reports were transmitted to the IRF by the British Transport and Road Research Laboratory, the English documentation center for the IRRD.

1. THE HIGHWAY INSTITUTE (Institut za Puteve): Kumodraska 257, Beograd, Serbia.

   b. Testing and Research Department (Sektor za Istrazivanje i Ispitivanje): Same address.

(9) Complex Stabilization of Road Bases Using Fly-Ash and Slag. An investigation of the possibilities of using large amounts of fly-ash available near power stations as an additive for soil stabilization. P. Braunovic, A. Tamas-Popovic. HRIS 62. IRRD 604787. ACTIVE

(15) Control and Administration of Construction. To develop methods and procedures for the administration of construction projects, for quality control of the work, payment for the work. M. Petkovic, B. Nikolic, M. Nikolic. HRIS 33. IRRD 604793. ACTIVE

(16) Organization for Road and Bridge Construction. A study of the organizations needed to perform engineering and construction functions necessary to build roads, including cost and equipment estimating. P. Mitrovic, M. Ivovic, S. Stojanovic. HRIS 33. IRRD 604794. ACTIVE

(17) Rheological Characteristics of Bituminous Mortars and Mastic Asphalt in Asphaltic Mixtures. Study of the dependence of rheological characteristics, viscosity, stiffness modulus and elastic characteristics of bitumen and bituminous mortars as well as mastic asphalt. D. Svetel, M. Granzan, M. Jovanovic. HRIS 31. IRRD 604826. ACTIVE

(18) Application of Limestone in all Courses of Pavement Structure. Research on possibilities of limestone application in bearing-binder and wearing courses of pavement construction with application of hydro-carbon materials as binders. D. Svetel, and others. HRIS 24. IRRD 604827. COMPLETE

(20) The Rheology of Bitumens with Regard to Road Construction and Waterproofing. A study of the rheology of bitumens in terms of applications to roads and waterproofing. D. Sbetel, J. Jovanivic, D. Mikatovic. HRIS 31. IRRD 606396. ACTIVE

(21) Correct Method for Pavement Design and Strengthening. A study of the mechanical characteristics of construction materials and the mathematical correlations which make possible calculation of stress and deformation in construction. Z. Radojkovic. HRIS 24. IRRD 606397. ACTIVE

(22) Rheologic Characteristics of Bituminous Mixture for Pavement Design. A study of those characteristics which are of special importance in the interpretation of results, including modulus of stiffness and elasticity, as well as stability and creep. D. Svetel. HRIS 31. IRRD 606398. ACTIVE

(23) Design and Construction of Motorway Pavements Made of Special Bituminous Materials. Study of new methods for designing, preparing and constructing different kinds of bituminous mixtures for upper pavement layers, including the use of hydrated lime and chemical additives. M. Granzan. HRIS 24. IRRD 606399. COMPLETE

New Projects

1. b. (24) Standards for Road Maintenance. To develop methods, standards and techniques for road maintenance, including winter maintenance. M. Mladenovic. HRIS 40. IRRD 606820. ACTIVE

(25) Standards for Bridge Maintenance. To develop methods, standards and techniques for bridge and retaining wall maintenance, including winter maintenance. M. Mladenovic. HRIS 40. IRRD 606821. ACTIVE

(26) Road Pavement Maintenance. To evaluate current standards for pavement maintenance with respect to the applied technological methods. Z. Radojkovic, P. Braunovic. HRIS 40. IRRD 606822. ACTIVE

2. INSTITUTE OF SERBIA FOR TESTING MATERIALS (Institut za Ispitivanje Materijala SR Srbije): Bulevard Vojvode Misica 43, 11,000 Beograd.

(7) Bearing Capacity and Rigidity Investigations in Pavements on Roads by Measuring Deflection. To study the behavior of pavements and choose a criteria for estimating bearing capacity. Z. Joksic. HRIS 24. IRRD 605015. COMPLETE

(8) Influence of Frost on the Durability of Flexible Pavements. To determine the effect of frost on flexible pavement behavior through field investigations. Z. Joksic. HRIS 24. IRRD 605016. ACTIVE

(9) Frost Action and Depth Penetration in Soil and Through Road Structures. Analysis of depth of penetration based on kind of pavement, its thickness, paving material properties, hydrological and climatic conditions. Z. Joksic, D. J. Uzelac. HRIS 64. IRRD 605017. ACTIVE

New Projects

(13) Causes of Pavement Deterioration, Kinds of Damage and Methods for Pavement Improvement. To investigate optimum dimensions for pavements considering traffic wheel load and environmental conditions. Z. Joksic. HRIS 24. IRRD 606823. ACTIVE

(14) Modification of Motorway Pavements Depending on Technical Characteristics and Exterior Factors. To investigate the performance of pavements under traffic conditions. Z. Joksic. HRIS 24. IRRD 606824. ACTIVE

(15) Technological Characteristics of Pavement Base-Course Materials. An investigation of optimum technological characteristics of materials used for road bases. S. Stojadinovic. HRIS 35. IRRD 606825. ACTIVE

(16) Asphalt Mixtures for Motorway Pavements. To consider optimum thickness and design of asphalt mixtures considering climatic conditions, materials used, method of construction and maintenance. M. Obradovic, S. Lazic. HRIS 31. IRRD 606826. ACTIVE

(17) Rheological Characteristics of Concrete and Concrete Mix Design for Motorway Pavements. To consider optimum thickness and mix design of concrete considering climatic conditions, materials used, method of construction and maintenance. J. Simic, O. Dickov. HRIS 32. IRRD 606827. ACTIVE

(18) Skidding Resistance of Road Surfaces Under Different Weather Conditions. To determine the skidding resistance of asphalt and concrete pavements at problem sections of the roads and how skidding resistance changes over time. S. Ivkovic, S. Stojadinovic. HRIS 24. IRRD 606828. ACTIVE

3. CIVIL ENGINEERING INSTITUTE (Gradjevinski Institut): Rakusina 1. 41000 Zagreb. Croatia

(21) Dynamic Characteristics of Asphalt Mixture in Relation to Pavement Design. To develop a new apparatus to measure the dynamic complex modulus of asphalt mixture for pavement design. Z. Vojnic. HRIS 31. IRRD 604768. FUTURE

(22) Improvement of the Triaxial Method for Asphalt Testing. To improve the measuring techniques by use of the electronic device. Z. Ramljak. HRIS 31. IRRD 604769. COMPLETE

(28) Study of Rheological Properties of Bitumen-Aggregate Mixtures. To investigate the dependence of strain on time and temperature under various loading conditions. Solc, Ramljak, Galjanic. HRIS 31. IRRD 604773. ACTIVE

(30) Study of Chemical Study of Chemical Structure of Bitumen. To find new methods for the rational separation of bitumen fractions based on chemical nature and not only on the polarity, and study of chemical changes in production and service. Solc, Ramljak, S. Galjanic. HRIS 31. IRRD 604779. ACTIVE

(31) Application Possibility of Fly-ash in Road Construction. Research on mixtures of local pure quality gravels with fly-ash for base courses in pavement construction. B. Babic. HRIS 34. IRRD 604774. COMPLETE

(32) Quantitative Estimating of Mechanical Properties by Measuring Acoustical Properties of Rocks. Determine relationships between mechanical properties and acoustical properties of rocks. B. Krtolica. HRIS 61. IRRD 604777. ACTIVE

(33) The Best Way to Prepare and Transport Bituminous Mixtures. Operational research into the methods of manufacturing and applying asphalt pavement through simulation. Nanad Mikulic. HRIS 33. IRRD 604778. ACTIVE

(34) Examination of Possible Employment of Industrial By-products in the Asphalt Pavement. Study of the filling properties and the resistance to water effects of trap rock fillers in bitumen mixtures. Branko Fucic. HRIS 31. IRRD 604775. ACTIVE

(36) Development of Frost Penetration Depth Chart. Computation of frost penetration depths by means of meteorological data and correlation equations estimated from measurements and chart preparation. B. Babic. A. Klemencic. HRIS 64. IRRD 604781. ACTIVE

(38) Comparison of Load Transfer for Specific Aircraft Types and Aircraft LCN Value Ratios. Theoretical and practical procedures to determine aircraft and pavement Load Classification Number values for various aircraft and types of pavements. Z. Horvat. Z. Korlaet. HRIS 24. IRRD 604782. COMPLETE

(39) Models for Forecasting Motorization. A critical review of models used for forecasting vehicle ownership in Croatia. Z. Duplancic. V. Simicic. HRIS 13. IRRD 606297. ACTIVE

(40) The Investigation of Pavement Bearing Capacity Parameters Based on Deflection Measurements. A study of bearing capacity parameters based on deflections using the Benkelman Beam and Lacroix Deflectograph. M. Srsen. M. Keller. HRIS 24. IRRD 606298. ACTIVE

3. (41) The Use of Industrial Byproducts and Local Low-grade Materials in Road Construction. To determine possibilities of improving byproducts and low-grade materials, such as cement and woven materials as binders for stabilizing chalky soils. B. Babic. HRIS 34. IRRD 606299. ACTIVE

(42) A Contribution to Solving the Water Runoff Problem on Roads and Highways Outside the Settlements. A study of the equipment for dealing with water runoff, including safety aspects. L. Legac. HRIS 22. IRRD 606300. COMPLETE

(43) Criteria for Selecting the Optimum Variant of Motorway to Link Zagreb with the Hungarian Frontier. Analysis of three possible corridors, considering such parameters as topography, urban areas, geology, etc. I. Banjad. HRIS 12. IRRD 606301. ACTIVE

(44) Investigation of Applications of the LCN Method in Relation to Aircraft Loading and Airport Maneuver Surfaces for Modern Types of Aircraft. A study of the impact of aircraft loads on concrete pavements. Z. Horvat. HRIS 24. IRRD 606302. COMPLETE

(45) The Economic Justification of Investment and Reproduction of Resources in Highways. To determine road network and road user cost factors, as an element of economic justification. V. Simicic. HRIS 15. IRRD 606303. ACTIVE

(46) The Methodology of Traffic Data Processing and the Design of Level Crossings for Roads and Street. Study of the distribution of traffic flow as a cause of collisions on level crossings, and analysis of traffic according to density and direction of flow. A. Klemencic, V. Rako, M. Markulin. HRIS 55. IRRD 606304. ACTIVE

New Projects

(47) Development of the Design Procedure for Strengthening of Asphalt Layers for Flexible Pavements by Deflection Measurement. To develop a procedure for strengthening asphalt layers of flexible pavements by deflection measurement by means of LaCroix Deflectograph and Benkelman Beam. M. Srsen, J. Bosnjak, M. Keller. HRIS 24. IRRD 606749. ACTIVE

(48) Influence of Constituents of Asphalt to Stress-Strain Process with Unconfined Lateral Deformation. To study influence of constituents of asphalt to stress-strain process with unconfined lateral deformation. Z. Ramljak, V. Pejnovic, B. Fucic. HRIS 31. IRRD 606750. ACTIVE

(49) Interaction of Bituminous Constituents with Aggregate in Bituminous Mixture. To study interaction between the bituminous constitutents and the aggregate in a bituminous mixture. Z. Ramljak, V. Pejnovic, B. Segedi, S. Silfard-Mihaljevic. HRIS 31. IRRD 606751. ACTIVE

4. INSTITUTE FOR TRAFFIC SCIENCES (Institut Prometnih Znanosti): Gruska 20, 41000, Zagreb, Croatia.

(8) Optimization of Transport Linking the Islands with Mainland. A comprehensive study of all factors relating to the problems of transport between the islands and the mainland, as well as within the islands, so as to determine a qualitative and economical solution. Z. Cibej. HRIS 12. IRRD 604760. ACTIVE

(9) International Traffic Flows and Position of Croatia and Yugoslavia in the European Transport System. To determine the present and future position within the European transport system and define the factors which could incluence the intensification of traffic flows over this territory and to define the long-term development conception of transport as integral system within the country. Z. Bauer, G. Telenta. HRIS 13. IRRD 604764. COMPLETE

4. (14) A Bypass System and Its Impact on the Development of City and Region. A study of the influence of a bypass around Zagreb on city traffic and the changes to be expected on land use development around the city and the bypass, as well as in the city. M. Zlatic. HRIS 13. IRRD 605539. COMPLETE

(15) Evaluation of the Indirect Users' Benefits from Roads and Their Participation in Road Financing Within the Socialist Self-managing Socio-economic System. To clarify the dilemmas in this field, taking into account theoretical and practical results obtained so far both in Yugoslavia and in the world. I. Liovic. HRIS 15. IRRD 605540. ACTIVE

(18) Road Traffic Counts in Croatia in 1979. Collection, analysis and publication of traffic counts on trunk and regional roads, including diagrams, time series and related data on road mileage, structure, road accidents and motor vehicles. F. Mihoci, B. Gostimir. HRIS 55. IRRD 696307. COMPLETE

(19) Systems Approach to Road Networks in Yugoslavia. A systems approach to road infrastructure in order to investigate its economics, finance, management and maintenance aspects. I. Liovic. HRIS 11. IRRD 606308. ACTIVE

(20) The Construction Program of the Motorway Network in Croatia Up to the Year 2000. A study of future needs of traffic and development of investment and construction priorities in Croatia, in consideration with needs of other Yugoslav Republics and neighboring countries. F. Mihoci. HRIS 11. IRRD 606309. ACTIVE

New Project

(21) Long-Term Development of the Transport System in the Socialist Republic of Croatia. To forecast social and economic development and transport demand with distribution between various transport modes up to 1985 and 2000. Z. Bauer, D. Bejakovic, I. Kamber. HRIS 13. IRRD 606897. ACTIVE

5. INSTITUTE FOR ROADS AND SOIL MECHANICS (Zavod za Saobracajnice i Geotehniku): Bulevar Revolucije 73, 11000 Beograd, Serbia

(1) Characteristics of Asphalt Paving Mixes with Elastomer Additives. An analysis of the rheological characteristics of asphaltic concrete mixtures with an elastomer additive, to assess the relative importance of mixture variables in predicting pavement performance. M. Obradovic. HRIS 31. IRRD 604829. COMPLETE

(2) Rough Asphalt Pavement Systems Investigation. Laboratory research on several asphalt pavement systems with different mineral aggregates, with research results tried on an experimental road. M. Obradovic. HRIS 31. IRRD 604830. COMPLETE

(3) Emulsified Bitumen for Subbase. A study of the performance of bituminous gravel used for subbase, the quality and quantity of emulsified bitumen, and the influence of time. M. Obradovic, A. Cvetanovic, R. Ljubicic. HRIS 62. IRRD 604831. COMPLETE

(6) The Influence of the Modulus of Stiffness and Fatigue in Determining the Thickness of Flexible Pavements. A study of the dynamic modulus of stiffness in relation to temperature and porosity of the pavement. M. Obradovic, A. Cvetanovic. HRIS 24. IRRD 606310. COMPLETE

(7) Binding and Adhesion of Bituminous Layers of Flexible Pavements. To determine the contact stresses of contiguous bituminous layers with different kinds of bitumen, and under different conditions. M. Obradovic, R. Ljubicic. HRIS 31. IRRD 606311. COMPLETE

5. (8) A Comparative Analysis of Methods for Designing Rigid Pavements. Comparative analyses to determine the optimal method for designing pavements in local conditions. A. Cvetanovic. B. Kolundsija. HRIS 24. IRRD 606312. COMPLETE

(9) The Geometrical and Dynamic Analysis of the Transition Point on Reverse Curves. The observation and analysis of curves that are connected by a pair of transition curves into a reverse curve. with the basic parameter represented by design speed and the possibility of acceleration or deceleration on the section of clothoids. V. Andjus. HRIS 21. IRRD 606313. COMPLETE

(10) Typology and Programmed Conditions for Junction Designing Outside Urban Areas. To analyze different types of two-level junctions constructed outside urban areas. J. Katanic. M. Maletin. HRIS 21. IRRD 606314. INACTIVE

(11) The Influence of the Railway Base Deformation on the Magnitude of Stress of Different Rail Profiles. Study of track deformation due to the subsiding of two or three sleepers. which cause additional static stress of the track. S. Rankovic. M. Stosic. HRIS 90. IRRD 606315. ACTIVE

(12) Stress of Eccentrically Loaded Rails. Study using diagrams of vertical stress in railway track cross section which are in aberration of the Bernoulli-Navier's solution to the problem. S. Rankovic. M. Stosic. HRIS 90. IRRD 606316. ACTIVE

(14) Contribution to the Study of Tunnel Structure Stability with Circular Cross Section of Multijoint Assembly System. To define a mathematical model applicable to tunnel construction by shield driving. and an analysis of the stability of multijoint tunnel structure in terms of the rheology and behavior of the rock. S. Popovic. HRIS 33. IRRD 606318. COMPLETE

(15) A Comparison of Method for Researching the Shape and Characteristics of Ramps. A comparison, beginning with basic theories, quality of input data, the method and time and cost estimation, form and usefulness of output data and estimation of method correctness. D. Bozovic. HRIS 21. IRRD 606319. ACTIVE

(16) The Analysis of Volume and Moisture Content Change in Cohesive Soil. Study of the shrinkage and swelling of artificially compressed soils with different moisture content. R. Stojadinovic. M. Cvetkovic. HRIS 61. IRRD 606320. COMPLETE

(17) Contributions to the Study of the Effect of Compression on Soil Structure. To observe the interdependence of conditions of compression and the soil characteristics. both in the laboratory and in situ. R. Stojadinovc. M. Cvetkovic. G. Skara. HRIS 62. IRRD 606321. ACTIVE

(18) Parallel Analysis of the Results of Compressing Soil in Laboratory and In Situ. To analyze the results of compressing soil in the laboratory, in situ for experiments, and on already constructed structures. R. Stojadinovic G. Skara. HRIS 62. IRRD 606322. COMPLETE

(19) The Evaluation of Rock Anchorage and Sprayed Concrete in Tunnel Construction. To determine the principles for correct estimation and successful approach to the mechanized excavation of tunnels. securing the rock by anchorage and sprayed concrete. B. Popovic. HRIS 33. IRRD 606323. COMPLETE

5. (20) Defining the Mathematical Model for a Rock Effect Estimation and for Tunnel Construction by Comparison with the Measured Results. An analysis of the mathematical model of a rock interaction and tunnel construction, in dependence of the technological process of construction and rheology, so as to find the correct method for evaluating tunnel construction. B. Popovic. HRIS 33. IRRD 606324. COMPLETE

New Projects

(21) The Horizontal Reactions of Railway Bridges Due to Temperature Changes. A study of the interaction between bridge and track because of temperature change to determine whether use of a flexible joint for longitudinal movement is indicated for some bridge construction. S. Rankovic, M. Stosic. HRIS 25. IRRD 606752. COMPLETE

(22) Stress in the Cross-Section of a Small Length of Track Placed Directly on Its Support. An analysis of stress and deformation of track under horizontal force. M. Stosic. HRIS 25. IRRD 606753. COMPLETE

6. INSTITUTE FOR MARKETING AND ECONOMIC RESEARCH: Marsala Tita 4, 11000 Beograd

(7) Traffic Planning Studies used in Designing the Layout of the Urban District of Bitola and the City Plan of Bitola. A detailed analysis of current and future transportation systems. V. Bozickovic, S. Cetkovic. HRIS 12. IRRD 604840. COMPLETE

(9) Application of the Methods of Identification of "Accident Black Spots" on the Belgrad-Titova Uzice Highway, and Proposal for Their Elimination. L. Stevancevic. HRIS 51. IRRD 604842. COMPLETE

(10) Operations Analysis and Improvement of Handling Goods in the Port of Bar. To prepare plan for loading and unloading goods in the port in preparation for increase in traffic. V. Djordjevic. HRIS 16. IRRD 604838. COMPLETE

(11) Reconstruction of Inter-Transport Systems in Three Factories. Plans for this reconstruction based on analysis of current flow of goods inside and outside factory subsystems within the whole transport system of each factory. V. Pejovic, L.J. Stevancevic, S. Markovic. HRIS 16. IRRD 604839. COMPLETE

New Projects

(12) The Flow of Goods in the Port of Bar. A poll of existing and a projection of potential users of the port, with a forecast of transport development. M. Panajotovic, V. Petrovski, Z. Kosovic. HRIS 15. IRRD 606757. COMPLETE

(13) Optimal Use of Space and Disposition of the Port of Bar. Investigation of use of space in the port, considering topographic change and shortage of space on land for traffic and storage. L. Stevancevic, N. Djuric, V. Pejovic. HRIS 12. IRRD 606758. COMPLETE

(14) Feasibility Study for the Revitalization of the Port of Bar. To consider the financial, economic, technical, traffic, transportation and maritime aspects of the revitalization of the Port. V. Pejovic, Z. Kosovic, M. Kuznik. HRIS 12. IRRD 606759. ACTIVE

(15) Transport Investigation and Microtechnology in Plastic Industry "Bukulja" in Belgrade. To determine, considering anticipated production plans, optimum use of space, choice of transport methods, storage technology and storage equipment. L. Stevancevic, V. Djordjevic. HRIS 13. IRRD 606760. COMPLETE

7. DR. MLADEN STOJANOVIC PSYCHIATRIC CLINIC (Psihijatrijska Klinika Klinike "Dr. Mladen Stojanovic"): Vinogradska 29, 41000, Zagreb, Croatia

(1) Setting up of an Alcoholics Register in SR Croatia. To establish the register as a dynamic statistical instrument to provide data essential for planning and programming a campaign against alcoholism. V. Hudolin, S. Sakoman, Z. Kulcar. HRIS 51. IRRD 605014. ACTIVE

(2) Treated Alcoholics, Mental and Neurologic Patients as Active Participants in Traffic. An extended study of the driving knowledge, clinical history of these patients who are active participants in traffic. V. Hodolin, S. Sakoman, G. Lazic. HRIS 52. IRRD 605537. ACTIVE

(3) Physical Fitness and the Habits of Drinking and Smoking Among 8000 Students Registered at the University of Zagreb in 1978. To study neurotic symptoms and the drinking, smoking and tranquilizer habits among the young generation, as part of an attempt to assess driving aptitudes of young drivers. V. Hudolin, S. Sakoman. HRIS 52. IRRD 606164. COMPLETE

(4) Evaluation of the Successful Curing of Alcohol Addicts in the Split Area. To determine the criteria for evaluating the curing of alcoholics. M. Milas, V. Hudolin. HRIS 52. IRRD 606165. ACTIVE

(5) The Regional Program for the Prevention of Alcoholism in the Region of Varazdin. To reduce the number of accidents in which alcohol is a factor, which includes treatment and rehabilitation of addicts. V. Nothig V. Hudolin. HRIS 52. IRRD 606166. COMPLETE

(6) The Phenomenon of Alcoholism in Kotor and Its Importance in Disturbing the Mental Fitness. A study of alcoholism in a coastal, tourist resort, and the effect of alcohol on the mental condition of drivers. N. Perkovic, V. Hudolin. HRIS 52. IRRD 606167. ACTIVE

(7) The Working Attitude of Treated Alcohol Addicts in the Bjelover Community. A study of the phenomenon of alcoholism as reported to the Commission for Invalids and evaluated with the aim of making a proposal for measures to improve working aptitudes of addicts, and as a contribution to solving problems of driving aptitude of professional drivers who are alcohol addicts. N. Gregurek, V. Hudolin. HRIS 52. IRRD 606168. ACTIVE

(8) Aggressive Behavior of Alcohol Addicts and the Possibilities for Their Rehabilitation by Different Methods of Treatment. A study of aggressiveness of such addicts, possibilities of treatments, and the dangers in traffic of such aggressive behavior. V. Drame-Persin, J. Rugelj. HRIS 52. IRRD 606169. ACTIVE

(9) Alcohol and Traffic Accidents in the Area of Cakovec Community from 1968 to 1977. To determine the number of accidents in this period, and find out the number caused by drunken road users. M. Golubic. HRIS 52. IRRD 606170. ACTIVE

New Project

(10) State of Health of the Student Population in the Socialist Republic of Croatia. To interview 40,000 students at the University of Zagreb on the occasion of their first registration and compulsory medical examination and identify those who have had a traffic accident and determine psychological differences with those who had no accident. S. Sakoman, V. Majnaric N. Javornik. HRIS 52. IRRD 606898. ACTIVE

8. ZAGREB ELECTRIC TRAMWAYS (Zagrebacki Electricni Tramvaj): Rade Koncara 239, 41000 Zagreb, Croatia

(1) Staggered Working Hours in Zagreb. To determine the best solution for working hours in Zagreb business zones, particularly the use of staggered hours as a solution. V. Valjak, V. Maric. HRIS 54. COMPLETE

(2) Cost Benefit Analysis of Introduction of Tramway Transport in South Zagreb. To determine the consequent increase in capacity and improvement of public transport in this area and its influence on public transport in other parts of the city. V. Valjak, I. Pelz, I. Kraljic. HRIS 11. IRRD 605430. COMPLETE

(3) A Study of the New Self-service System of Fares in the Public Transport of Zagreb. The study considers tickets, issuing and canceling machines, marking and naming stops of the vehicles, signing, and informing the public about the new system. V. Valjak, B. Vrecic, D. Kroupa. HRIS 15. IRRD 606325. (Citations) COMPLETE

New Projects

(4) Study of the Development of Tramway Network in the Western Part of the Southern Area of Zagreb with Regard to the Construction of the Tresnjevka Bridge Over the Sava. To investigate the possibility of placing the tramway turn round point at the intersection of the Boris Kidric Avenue and the Remetinecka Road and possible extensions to the South and East. V. Valjak, I. Peltz. HRIS 12. IRRD 606899. ACTIVE

(5) Investigation of Congested Tramway and Bus Services with a View to Possible Improvement. To investigate by passenger count and interview the correctness of present vehicle routing in the tramway and bus network. Z. Delic, D. Lisicin, D. Milosevic, V. Valjak, J. Pevalek. HRIS 16. IRRD 607000. ACTIVE

(6) Investigation of the Most Convenient Town Planning Solution for Improving Pedestrian Traffic in Town Centre. To stress the improvement of the traffic environment for pedestrians and increase traffic capacity of the Republic's square for tramway. I. Kraljic, I. Peltz, V. Valjak, O. Pucic. HRIS 12. IRRD 607001. ACTIVE

9. TOWN PLANNING-DEVELOPMENT OFFICE (Razvojno-Urbanisticki Biro): Istraska 6, 51000 Rijeka, Croatia

(5) Study of Public Transport in the Area of Rijeka. To determine the optimal alternatives for the traffic system in the town center, with special emphasis on public transport. A. Sladic, M. Benigar, M. Kudis, D. Cicovacki, L. Zobundzija. HRIS 11. IRRD 605432. ACTIVE

(6) Traffic Research on Building the Parking Garage in the Center of Rijeka. To determine the optimal location and type. M. Benigar, A. Sladic, V. Petrinovic-Bralic, M. Stimac. HRIS 54. IRRD 605433. COMPLETE

(8) Area Plan of the Metropolitan Region of Rijeka. Study of the problem of location of industry, national and international traffic infrastructure, development of tourism and the standard of living in the region. D. Bizaca. HRIS 11. IRRD 606401. ACTIVE

New Project

(9) Optimization Study of Harbour Location for General Freight in the Kvarner Bay. To determine the optimal location of the harbor for general freight within the Rijeka harbor system. D. Bizaca, M. Kudis, V. Margitic, B. Prikril, M. Ruzic, J. Simunovic, E. Varga, L. Zobundzija. HRIS 12. IRRD 607002. COMPLETE

10. INSTITUTE FOR MEDICINE AND TRAFFIC PSYCHOLOGY (Institut za Medicinu I Psihologiju Prometa): Sarengradska 3, 41000 Zagreb, Croatia

(1) Traffic Traumata in SR Croatia. To determine the epidemiology of traffic traumata and compare it with other kinds of traumata. I. Jelcic, I. Culina O. Cupar. HRIS 51. IRRD 605538. ACTIVE

(2) Evaluation of Physical Fitness and Selection of Candidate Drivers, and Drivers of "D" Group Vehicles (Bus Drivers). An analysis of physical fitness of these candidates for training, together with evaluation of present selection process. I. Jelcic. HRIS 52. IRRD 606154. ACTIVE

(5) Black Spots on the Roads of Croatia. To determine the number of black spots through operative research on the spot, noting road conditions, as well as human factors involved. I. Jelcic, M. Mlacic, J. Erceg. HRIS 51. IRRD 606157. (Citations) ACTIVE

New Project

(6) Early Detection of Dyschromatopsy in Students for Their Future Professional Orientation and Traffic Security. To detect color vision impairment in students and notification of parents to assist in selection of proper training and future occupation. M. Zenebe. HRIS 52. IRRD 606829. ACTIVE

11. ENGINEERING DESIGN INSTITUTE (Inzenjerski Projektni Zavod) Petrinjska 7.11000 Zagreb, Croatia

(1) Bearing Displacements and Distribution of Horizontal Loads Over Bridge Supports. A study of the distribution of horizontal moments among the given bridge supports and the choice of bearings and their location. S. Storga. HRIS 25. IRRD 605434. ACTIVE

(2) Approximation of a Series of Points by the Most Probable Circle. To replace a series of points with determined coordinates by a circle, using a computer. J. Sekopet. HRIS 90. IRRD 605541. ACTIVE

New Project

(4) Continuous Frame Structures for Prefabricated Bridges and Overbridges with a Span of 50 M. To investigate the application of the standard continuous frame structures for prefabricated bridges and overbridges. O. Srsek. HRIS 25. IRRD 607003. (Citations) ACTIVE

12. BRACE DR. SOBOL CLINICAL HOSPITAL, SURGICAL CLINIC (Kirurska Klinika Klinicke Bolnice "Brace Dr. Sobol"): Butkovica 4, 51000 Rijeka, Croatia

(1) Epidemiology and Clinical Aspects of Traffic Injuries. A study of traffic and injuries in general, regardless of kind of traffic and vehicle involved. A. Longhino, Z. Neumann, Z. Tomljamovic, I. Rakuljic. HRIS 51. IRRD 605435. ACTIVE

13. INSTITUTE FOR ECONOMIC RESEARCH (Institut za Ekonomska Raziskovanja): Vojkova 69, 61000 Ljubljana, Slovenia

(1) The Use of Methods of Multi-criteria Analysis for the Appraisal of Public Transportation Projects. To review existing approaches for such appraisals. M. Simoncic, C. Gregorc. HRIS 12. IRRD 606171. COMPLETE

(2) Past and Future Development of Tourist Traffic Flows in Slovenia. To define the optimal road network to be constructed in the next 20 years considering the forecasted tourist traffic. M. Luznik, F. Logar, M. Simomcic, M. Blejec, R. Kristan. HRIS 55. IRRD 606172. ACTIVE

13. (3) Analysis and Forecast of Freight to be Transported by Road or Railway. To develop data on freight requirement for different groups of goods. economic activities to be shipped by road or by rail in Slovenia. M. Luznik, J. Sumat. HRIS 55. IRRD 606173. COMPLETE

14. GEOTEHNIKA-GEOEXPERT INSTITUTE: Brace Domany 6. 41000. Zagreb. Croatia

(2) Bologne Avenue III: Soil Mechanics Investigation Works. Soil mechanics research relating to foundations of road bridges and retaining walls on the Zagreb-Maribor Road. V. Pehner. M. Brundic. S. Prokopovic. HRIS 63. IRRD 606159. COMPLETE

New Projects

(5) Geotechnical Investigations for the Karlovac-Rijeka Motorway. Geological geophysical and geomechanical investigations in shallow boreholes. as well as in earlier ones are being carried out. V. Pehnec. M. Cesarec. M. Nejkova. D. Jagatic. D. Dujumic. HRIS 61. IRRD 607004. ACTIVE

(6) Lithographic Treatment and Soil Classification of the Medvednica Hills in the Area of Zagreb Town. Zapresic and the Area of Velika Gorica. Concerns making of lithographic maps and soil classification of certain areas. suitable for use with regard to soil stability. I. Kleiner. M. Cesarec. M. Nejkova. N. Radosevic. K. Pocak. HRIS 61. IRRD 607005. ACTIVE

15. SELF-MANAGING COMMUNITY OF INTEREST FOR ROADS OF THE SOCIALISTIC REPUBLIC OF CROATIA (Samoupravna Interesna Zajednica za Ceste Hrvatske): Voncinina 3, 41000 Zagreb. Croatia

(1) The Role of Roads in the Economic Development of the Country. To show that all investments in road infrastructure are effective in cutting down production costs and. in general. stimulate investments in new production capacity. V. Kos. HRIS 15. IRRD 606163. ACTIVE

16. URBAN PLANNING INSTITUTE OF THE SOCIALIST REPUBLIC OF SLOVENIA (Urbanisticki Institut sr Slovenije): Jamova 18, 61111 POB 3 Ljubljana. Slovenia

(3) Analysis of Bus Traffic in Slovenia. To present bus traffic frequencies and time distances among traffic zones in general and among their centroids. L. Gosar. F. Zakrajsek. HRIS 12. IRRD 606328. COMPLETE

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(4) Urban Future Planning - Urban Planning for Residential Area. Vol. 05. An investigation of criteria for urban planning and design in urban areas. L. Sarec, M. Lebenicnik. M. Mede. HRIS 12. IRRD 606833. COMPLETE

(5) Environmental and Locational Criteria for Fast Food Stands. To consider environmental and locational criteria when considering food stands for location in the vicinity of circulating traffic. M. Debelak. M. Vovk. D. Kozul. HRIS 12. IRRD 606830. COMPLETE

(6) Urban Transportation Planning - Urban Design Criteria/Chapter - Urban Planning Criteria for the Socialist Republic of Slovenia. Phase III. Vol. 04. An examination of the criteria for assessing transport as a part of the urban structure. L. Lenarcic. HRIS 12. IRRD 606831. COMPLETE

17. FACULTY OF TRANSPORT AND TRAFFIC ENGINEERING (Saobracajni Fakultet): Vojvode Stepe 305, 11000 Beograd. Serbia

(2) The Optimal Plan for Conducting the Power-Traction System of a Tramway Network. To determine the network of tramway lines in Belgrade. the route plan of passenger transport. and stimulate the process of power-traction. D. Dinic. HRIS 12. IRRD 606403. ACTIVE

17. (3) Thyristor Regulation of the Power-Traction Circuit for Tramways. To apply an automatic system for operation, control and protection in order to increase working and traffic safety as well as efficiency. D. Dinic, D. Balan. HRIS 11. IRRD 606404. ACTIVE

18. FACULTY OF MINING AND GEOLOGY - DEPARTMENT OF GEOMECHANICS AND GEOPHYSICS (Rudarsko Geoloski Fakultet - Oour Geotehnika i Geofizika): Djusina 7, 11000, Beograd, Serbia.

(1) Dynamic Characteristics of Cohesive Soil. A study of the effects of traffic loads on the subgrade, with varying loads. I. Sutic, L. Cani, C. Markovic, Z. Radojkovic. HRIS 61. IRRD 606405. (Citations) ACTIVE

(2) The Deformation of Peat Soil (Plateau of Zemun). A study of the different thicknesses of air action to study porosity and deformations. G. Markivic, L. Cak, D. Bozinovic, O. Isakovic. HRIS 61. IRRD 606406. (Citations) ACTIVE

(3) Rheologic Characteristics of Consolidated Clay and Marl. Testing of highly consolidated tertiary marl and clay, using a triaxial apparatus developed at the school. C. Bozinovic, L. Caki, C. Markovic, P. Anagosti, B. Ilic. HRIS 61. IRRD 606407. ACTIVE

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(4) Slope Stability Research by Finite Element Method. To investigate slope stability of the ground in the complex Belgrade area by means of the finite element method. S. Coric. HRIS 63. IRRD 607006. ACTIVE

19. REFERRAL CENTER OF THE UNIVERSITY OF ZAGREB (Referalni Centar Sveucilista U Zagrebu): Trg Marsala Tita 3, 41000 Zagreb, Croatia

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(1) Recording and Data Processing for Documentation Scheme in Civil Engineering Construction. Investigation of the most convenient way of recording documentation in civil engineering construction for storing and data processing. M. Vukelic. HRIS 11. IRRD 606754. COMPLETE

20. NATIONAL HEALTH SCHOOL, UNIVERSITY OF MEDICINE IN ZAGREB (Skola Narodnog Zdravlja "Andrija Stampar", Medicinskog Fakulteta): Rockefellerova 4, 41000 Zagreb, Croatia

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(1) Elderly Persons in Traffic. To determine if elderly drivers, pedestrians, and passengers are accorded maximum traffic safety measures. A. Vorko, M. Vukelic. HRIS 52. IRRD 606756. ACTIVE

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GERMANY - 1(66), (111), (125), (137), (141-142), (151-153), (166-167), (174); 18g(1); 28f(16), (19-20); 92(4); 146(7-8); 190(1); 191(1-3); 191a(4); 234(1); 253(1)
GREECE - 3c(18)
HUNGARY - 1(11), (26), (29), (64-65), (78-80), (91-92), (134)
INDIA - 33(6); 46(5)
IRELAND - 1e(11); 8(108-109)
ISRAEL - 19(18)
ITALY - 3(69)
JAPAN - 1a(65), (79), (90); 1b(134), (140), (161), (165), (171), (181-182), (184), (186), (190); 1f(5), (7-8); 2a(64-65); 4(30); 5(26); 8a(67); 21(21), (46); 45a(5); 50(4-5); 61(8); 67(4); 123(1)
MEXICO - 2e(18), (28); 8(4)
NETHERLANDS - 2b(15); 3e(10), (15)
NEW ZEALAND - 13(4); 24(3); 36(2); 47(1)
NORWAY - 12(2); 17(2)
PORTUGAL - 1c(2); 1g(1-2)
SOUTH AFRICA - 1a(159), (173); 13(23); 14a(11)
SPAIN - 2a(156)
SRI LANKA - 18a(14)
SWEDEN - 1(401); 9(46); 11(38-39); 12(70), (73); 79(2); 101(1-2); 108(1)
SWITZERLAND - 26(1)
TURKEY - 3(87)
UNITED KINGDOM - 1a(673), (677), (679), (681), (689), 6(14), (26); 32a(24); 32b(3); 50(109-112); 82d(3); 88d(12); 167(8); 179(2); 180(6-7); 198b(1-5)
UNITED STATES
  National Agencies - 1b(39-50); 2(16-18); 4(17); 5(1-2); 11a(1-4)
  State and Local - 1a(1); 5a(4-10); 5j(3); 5o(1-4); 5bd(4-5); 5bn(1); 5cj(1); 5ds(1); 6g(5); 7c(1); 9d(3-5); 9o(1); 12c(3); 13f(9); 13s(1); 16c(1); 17a(2-3); 17g(1); 18a(1); 19e(2); 20g(4); 21ao(10); 21ap(16); 22c(8); 22f(5); 25d(1); 26d(4); 28c(11); 29c(2); 30a(1); 30g(1); 32a(16-17); 32f(5); 32k(17); 33k(1); 36a(3-10); 36g(1); 37e(1); 38f(3-4); 38am(2); 43g(7); 43u(8); 46c(6-7); 46d(6); 46z(5); 46as(1); 47e(2); 48d(9); 49i(3); 51g(1); 51ba(3)

21. FACILITIES DESIGN

ALGERIA - 1b(4); 2(1)
AUSTRALIA - 1(85), (96), (109), (114), (129), 3a(12), 4(12), 5a(29-30), (37); 5d(1), (3-4); 7c(1); 7d(1-3); 8f(1), (3); 9(17), (63); 10a(30); 10c(28), (34); 10f(25), 15a(2); 16a(40), (42), (60), (77); 21a(11), (17); 22(47); 53(3), (5), (7); 81(2); 113(1-2)
AUSTRIA - 3b(32)
BELGIUM - 23(28)
BRAZIL - 2a(62); 15a(53)
COLOMBIA - 23(8)
CZECHOSLOVAKIA - 3a(11)
DENMARK - 7(3)
FINLAND - 1d(27-28); 2(115), (121); 17(1)
FRANCE - 15(336)

GERMANY - 1(1), (86), (133), (176); 6(2); 16d(12), (42); 16e(9); 17k(1); 21g(1); 21h(1); 24k(1); 26a(36); 26c(4-5), 28f(22); 33a(24), (30); 50(1); 53(3); 54(15); 62(12); 87(1); 94(29), (32); 122(5-6), (9), (12), (14); 152(3-4) ; 231(1), (7-8); 254(1); 257(3); 296(1)
HUNGARY - 4(10); 6(2); 7(10)
INDIA - 1a(170), (173); 5a(152); 11d(11); 46(3)
INDONESIA - 1a(40); 1b(13)
IRAQ - 2(4)
IRELAND - 8(15), (74), (96), (97-98)
ISRAEL - 1f(31), (49); 31(1)
JAPAN - 1a(1), (38), (80); 1b(7), (68), (104), (112), (121), (135), (164), (183), (203); 2a(71); 3a(12), (20); 8a(18); 33(1); 50(7); 74(1-2); 82(10); 97(1); 102(3); 124(1)
MEXICO - 1a(129), (199)
NETHERLANDS - 5(56)
NEW ZEALAND - 4c(1)
NIGERIA - 11(2)
NORWAY - 1(115), (128)
POLAND - 4b(6); 7a(11)
ROMANIA - 1b(3-4)
SOUTH AFRICA - 1a(96), (152); 7b(6); 9a(22); 12b(10), (13-14); 13(11); 14b(12); 13a(3), (5)
SRI LANKA - 18a(8); 18a(10)
SWEDEN - 1(368); 2(36); 12(74)
SWITZERLAND - 1a(2), (9), (26), (28), (30-31), (35-37); 1f(16); 4(25); 8b(2); 8i(1-3), (5); 8k(1); 8p(4); 8q(1); 8u(1); 8w(1); 82(2); 14(1); 31(1); 33(2)
TUNISIA - 1b(13)
TURKEY - 1c(20)
UNITED KINGDOM - 1a(700); 26a(38); 158(23); 194(10)
UNITED STATES
  National Agencies - 1a(2); 1b(51-97); 2 (19-24); 11d(4)
  State and Local - 1i(1); 2b(3); 5a(11-19); 6a(3); 6d(1-2); 7a(2); 7c(2); 9d(6); 12a(1); 13j(1); 14g(4); 15a(3); 17a(4-5); 18a(2-3); 19e(3); 22j(1); 30a(2-5); 31e(1); 32a(18-21); 33a(2); 35e(6-8); 35g(1); 37a(1);38a(1-3); 41a(1); 43ad(9); 46c(8-12); 47e(3); 48d(10); 49a(1); 50a(1); 51as(2); 52a(1); 52c(3)
YUGOSLAVIA - 5(9-10); 5(15)

22. HYDROLOGY AND HYDRAULICS

AUSTRALIA - 1(105); 5a(48); 6(59); 8d(11); 8f(2); 9(54), (62); 10f(14); 17a(7), (9): (39); 20(3); 36(2), (4), (6); 53(6); 73(5), (7); 82(8), (11)
BRAZIL - 6b(11); 53(4-7)
DENMARK - 1a(28)
GERMANY - 16d(45); 21f(1-2); 26p(1); 33h(3); 205(1); 238(1-2); 301(1)
INDIA - 1a(168), (231); 14(39), (40); 16(2-6); 30(2-3)
INDONESIA - 1a(21)
JAPAN - 1a(45); 1h(1); 3a(19); 105(1-3)
MEXICO - 1a(102), (154-55), (157-58), 212-14); 2f(7), (22), (36), (40-43)
MOROCCO - 1d(11); 1e(7); 8(2)
NEW ZEALAND - 1b(33); 1j(1-2); 3a(56-7)
PERU - 1c(5)
PHILIPPINES - 1f(1)
SWEDEN - 12(75)
SWITZERLAND - 2b(7); 8t(1)
TUNISIA - 1b(20)
UNITED KINGDOM - 1a(672); 204(7)
UNITED STATES
  National Agencies - 1a(3); 1b(98- 121); 2(25); 9(1-29)
  State and Local - 1c(2); 5a(20-28);5br(1); 5cl(1-2); 6g(6-8); 7a(3); 7c(3); 9d(7-10); 11b(5-6); 13d(9-10); 14g(1); 15e(8); 16c(2); 17a(6); 18a(4); 20a(3-4); 22c(9); 24a(1); 35b(1), (5); 38a(4); 38b(1); 38e(1); 38f(5-7); 41a(2); 43f(1); 46c(13-(15); 47e(4 -5); 48d(11); 50a(2)
YUGOSLAVIA - 3(42)

23. ENVIRONMENTAL DESIGN

AUSTRALIA - 4(13), (16); 6(56)
BRAZIL - 15c(6-7); 25(17)
FINLAND - 4(29)
GERMANY - 16e(31); 16g(2), (4); 28u(1); 33h(4); 98(1); 216(3); 220(5)
INDONESIA - 1a(42)
JAPAN - 1a(69); 1b(152); 10(1); 1p(1); 13(64); 23b(18); 29(21); 31(9); 32(2); 42(3); 50(2); 55(1); 59(3); 61(3); 82(9); 103(3)
MOROCCO - 1a(7)
NETHERLANDS - 2a(2)
POLAND - 2(105)
PORTUGAL - 1g(3)
SWITZERLAND - 11(1); 36(1)
UNITED KINGDOM - 1a(723)
UNITED STATES
  National Agencies - 1a(4); 1b(122-132); 4(18-21); 9(30-31)
  State and Local - 2a(1); 2b(4-5); 3c(2-3); 4d(3); 5a(29-41); 5i(8-9); 5j(4-7); 5m(1); 6a(4); 6g(9); 7a(4); 7c(4); 10a(3-4); 11a(2-4); 12c(4); 13d(11); 13aa(1); 14g(2); 18a(5); 18c(1); 21h(1); 22c(10-12); 22e(1); 23a(1-3); 23d(2); 26d(5); 28c(4-9); 29d(1); 30a(6); 30c(1-2); 33a(3); 33d(1-3); 35b(2); 35e(9); 37e(2); 38a(5-16); 39c(1); 43u(9); 46c(16-19); 46d(7-10); 47a(4); 47c(2-3); 47e(6-7); 47k(1); 48d(12); 49d(6-7); 50a(3); 50b(2)

24. PAVEMENT DESIGN AND PERFORMANCE

ALGERIA - 1a(10)
ARGENTINA - 2(15); 3(33); 4(36)
AUSTRALIA - 1(56-57), (80), (93), (98), (106), (117), (127-28), (150), (158-59), (165), (167); 3a(34), (36); 5a(7), (34), (58), (62); 5d(5); 6(23), (26), (28), (48), (57); 7a(51); 8a(41), (47), (57); 9(47); 10f(3-4), (9), (18), (23-24); 11a(26); 16a(2); 21a(5), (12), (14), (18) ; 26(3), (5); 29a(3-4); 35(4-5); 36(7); 48(1); 92(1); 106(2); 108a(1)
AUSTRIA - 3b(34)
BELGIUM - 3i(10); 23(27)
BRAZIL - 2a(50), (59), (63-68); 5(27); 15a(54-56); 28(11); 53(3); 62(1); 70(1)
COLOMBIA - 9a(18); 23(9-10)
CZECHOSLOVAKIA - 3a(5-6), (9-10), (12), (14-15), (17), (20), (27); 4(2), (8)
DENMARK - 1a(7), (10), (36), (42); 2a(50), (52), (54); 4(22); 5(9), (14)
ETHIOPIA - 1(69-70)
FINLAND - 1c(68-70); 2(127), (131-33); 4(27)
FRANCE - 1c(43); 1e(927)
GERMANY - 1a(10), (50), (85), (116), (126), (138), (140), (154-55), 160-61), (164);5(21); 15(5); 16d(11),(44); 17c(19), (23), (26), (31-32), (36); 17i(3); 19c(11-12); 21a(4); 21f(4); 24a(5) , (8), (28-30; 24i(1), (5), (8-9); 26e(14), (29); 26i(1); 28a(24), (26), (28-29), (35-36); 28c(8-9); 28j(12-13), (18-20), (22-24), (27-29); 33b(14), (16-17), (19-25); 33e(1), (20), (23), (42-43), (47); 46(1), 3-5); 131(4); 132(1); 169(1); 175c(4); 204(2)
HONDURAS - 1f(11)
HUNGARY - 1(27), (31), (47-48), (56-57), (85-86), (97), (99-101), (135-137); 3(2); 4(9-10); 6(5)
INDIA - 1a(164), (165), (171-172), (175), (202-203), (216), (218-219), (243-244); 5a(30), (104), (144-146), (153-154), (169); 7(30), (36), (45); 8a(11), (30); 9b(18-19), (21-22); 11a(34), (40); 11d(3), (6), (8), (13-14); 14(17), (22), (25-26), (31-33), (37-38); 18(11); 19(3-5); 22(5-6); 27(3); 28(2); 32(13-16) (29); 33(4); 36(4); 37(4); 39(4), (6-7); 42(2), (6-8), (14-16); 47(1-3); 50(1)
INDONESIA - 1a(2), (14), (22-23), (43)
IRELAND - 1a(10); 2a(15), (19), (21); 8(28), (42), (48), (60), (65), (67), (70-71), (73), (106), (113), (117)
ISRAEL - 1f(43)
ITALY - 23(9); 24(6)
JAPAN - 1a(36), (42), (46); 1b(63), (69), (74-75; 1g(2); 1n(1-2); 2a(10), (34), (39), (41), (56), (62-63); 3a(11); 7(14-15); 8a(16), (21), (44-46), (48); 13(51), (65); 14(18), (20); 16a(24); 20a(13), (19-20); 20b(4), (7), (10); 21(25), (29), (41), (47); 28(7); 29(1), (24-25), (30-31), (43); 37(40); 55(2); 64(33); 66(8); 70(1-2); 71(1); 75(6); 79(16); 80(4); 92(2); 102(1), (4); 119(2); 120(1); 121(1)
KENYA - 1a(19), 2(15-16); 7(4)
KUWAIT - 1b(29)
MEXICO - 1a(136-138), (140), (162-165), (180-183), (191-192), (194-195), (198), (200-201); 2e(24-25)
MOROCCO - 1a(4), (13), (17), (28), (30), (32), (36-37); 1d(12); 1e(2-3), 5(1)

NETHERLANDS - 1(49-50), (54), (78), (80), (84), (88-91), (101); 2a(3); 3b(16); 3c(11-12; 5(33)
NEW ZEALAND - 1f(5); 3d(1); 34(3); 41(1); 44(1); 45(1)
NIGERIA - 2(10); 2(36-37); 4(9); 8(5-6)
NORWAY - 3a(62)
PAKISTAN - 7a(21)
PERU - 1c(6)
PHILIPPINES - 1g(1)
PORTUGAL - 2b(19-20); 2b(22), (24)
ROMANIA - 1a(36-37), (42), (45), (50); 2(12-13), (26), (33); 2a(3-4); 2c(1)
SOUTH AFRICA - 1a(60-65), (68), (97), (100), (109), (138), (175); 5(9); 12b(1), (11), (16); 13(7); 14b(16-17); 15a(16), (21-22); 31a(6)
SPAIN - 2a(150); 3c(57)
SWEDEN - 1(391), (397), (402); 24(3); 37(10); 83(2)
SWITZERLAND - 1a(4), (14), (17-18), (20), (23-24), (33); 1c(11), (14-15); 1h(1); 2f(3); 4(26), (30); 8l(2); 8p(3), 24(1)
THAILAND - 3(76-85)
TURKEY - 1c(21); 3(88)
UNITED KINGDOM - 1a(664), (706), (708), (710-712); 20a(26); 21b(17); 25(1); 137a(11); 177a(5)
UNITED STATES
  National Agencies - 1a(5-9); 1b(133-166); 2(26-32); 6b(1-14)
  State and Local - 1a(2-3); 1d(2); 2a(2-5); 3a(2-6); 30(1); 4a(2-5); 4d(4-5); 5a(42-56); 6a(5-6); 7a(5); 9a(2-11); 10a(5-6); 10e(5-6); 10n(1); 12a(2); 12c(5); 13a(3-9); 13d(12); 13n(1-3); 14a(2-3); 14g(5); 15a(4-9); 16a(1-3; 17a(7-24); 17d(2); 18a(6-10); 19a(1-3); 20a(5-11); 20e(1-2); 21a(5-6); 22a(2-12); 23a(4-10); 24a(2-5); 25a(1-3); 26a(1); 27a(1-2); 27b(4); 30a(7-14); 30c(3); 31c(2-3); 31e(2-4); 32a(22-32); 32f(6); 33a(4); 33d(4-5); 34a(1-5); 34b(4); 35a(2-4); 35b(3); 35d(1); 35e(10-11); 35ag(1-2); 37a(2); 37e(3); 38a(5-16); 38f(8-14); 42b(2); 43a(1); 43g(8-10); 43h(2-3); 44a(4-5); 46c(20-28); 46i(1); 47a(5); 47e(8); 48e(1); 49a(2-6); 51a(1-2); 51bc(1); 52a(2)
YUGOSLAVIA - 1b(18), (21), (23); 2(7-8), (13-14), (18); 3(38), (40), (44), (47); 5(6), (8)

25. STRUCTURES DESIGN AND PERFORMANCE

AUSTRALIA - 3c(14); 6(62); 7a(46), (50); 8a(28-29), (37), (44), (56); 8d(1), (7-9), (12); 9(37), (41), (50-52), (55-56), (61); 10a(40); 10d(11-15), (17-19), (21-23); 10f(29), (32-33); 11a(20), (22-24), (34), (37); 12c(11-13), (15-17), (19-20), (23-27); 14a(16); 15a(1), (3-5); 16a(37), (70-72), (74-75), (84); 16b(25); 17a(14), (20), (37-38), (40-41); 18b(23)
BELGIAM - 3f(13)
BRAZIL - 2a(69-71); 8a(4); 77(1)
CHILE - 1c(2)
CZECHOSLOVAKIA - 3b(7-17), (22-23)
FINLAND - 1b(5); 2(134)
FRANCE - 1c(41-42); 1e(937-938), (941); 17(133-134)
GERMANY - 1(128-132), (144-147), (170), (173); 2(2-3); 7(3); 9(2); 16a(12), (17), (19); 16i(3), (6-7); 16n(1); 17a(10); 19a(16-17), (21), (25-26), (28-29), (31-32), (34), (36), (38-39), (42-47), (53-54); 19f(3), (6-10); 19g(2-5); 19h(2); 19i(1-5); 21(1-2); 21b(10), (26-27), (29-30); 21d(3-5), (8), (10-11); 24d(2); 24l(2-3); 24n(1); 26h(8-10), (12); 26k(6), (11), (15), (18); 26l(1); 28b(20); 28k(2), (6), (8), (10), (13-16), (33-34), (36), (39), (41-43), (45-46), (49-51), (56-57), (61-63), (65-70); 29d(1); 33c(11), (16-19); 33e(12), (14), (22), (29), (53); 33k(3), (5-6), (8), (11-18), (20); 33l(2); 62(6); 107(2); 108(5-6); 113(14); 149b(3); 155(11); 155a(1); 156(2); 157(3-4); 159(3), (5); 160(1); 166(4), (6), (8-9); 179(2); 187(2); 192a(1-4); 192c(1); 213(1); 214(1); 215(1); 216(1); 218(1); 229(1); 243(1); 244(1); 265(1); 283(1); 284(1)
HUNGARY - 1(16), (46), (58), (87), (102), (138); 3d(2-3); 6(6), (11-12)
INDIA - 1a(159), (160-161), (204); 1b(11); 1c(11-12), (19); 5a(55), (84): (143), (156); 9a(9), (11), (18-20); 9e(6); 10a(9-10); 11a(12-13), (16), (38-39); 11b(9), (16); 11c(1), (3-4), (6-15); 14(9), (13), (35); 21(5); 22(3), (8-9); 44(3-4); 54(1)
INDONESIA - 1a(24-28); 1b(18-19)
IRELAND - 1e(16); 8(114)
JAPAN - 1a(58), (61), (70-75), (91);1b(37), (58), (64), (85), (101), (141), (143), (145), (148), (159), (168), (180), (185), (195-198); 2a(51), (60), (69-70), (72-75); 4(11), (25); 8a(17), (37), (40), (50), (57), (60), (64); 12(4); 13(45-46), (50), (52), (54), (56), (66-69); 14(14-15), (21-24); 15(12), (15), (19); 16a(26-28), (38-39); 17a(38-41), (43-45); 19(14), (27); 21(23-24), (27-28), (30-32), (42), (48); 22a(29), (39), (44-45), (59-77), 79-101);23a(5), (13-16), (20-21); 23b(14), (19-20); 24(12), (15), (18); 25(11); 29(7-8), (11), (15-20), (27), (29), 32-34), (37), (39), (44-45); 37(39), (42); 42(4); 50(8); 51(3); 59(5-6);62(3); 64(28-29), (35-36); 65(6), (11-12); 66(1-2), (7), (9-16), (18-19); 67(2); 73(2); 76(9); 78(3); 82(20); 82(24-25); 91(2-4); 105(4-6); 106(1),(5); 114(2);122(1-2);125(1-2)

KUWAIT - 1b(30-31)
MEXICO - 1a(148), (205), (211)
MOROCCO - 6(1-2)
NETHERLANDS - 5(50)
NEW ZEALAND - 1b(34-37); 1k(1); 2a(53-58); 3a(58-66); 5e(1); 17(22); 23(4); 39(1)
NIGERIA - 2(3); 4(12-13); 4(24)
NORWAY - 3e(1); 21(1-2)
PHILIPPINES - 1f(2)
POLAND - 7a(12-15)
PORTUGAL - 1h(1); 1i(1)
ROMANIA - 1a(16), (40): (47), (53-54); 2(1-2), (21), (24), (41-43); 2b(4-7)
SOUTH AFRICA - 1a(147), (166-167); 11a(10), (12-13), (21), (23-24); 15a(18)
SPAIN - 2b(29)
SWEDEN - (71-72); 75(2)
SWITZERLAND - 1a(25), 1e(1-11); 2b(12); 2e(2-3); 4(22), (24); 6(4); 32(1)
THAILAND - 3(87)
TUNISIA - 1a(10); 1b(14)
UNITED KINGDOM - 1a(667-671); 2g(4); 6(15-18), (23); 16d(13); 17a(34), (36); 20a(27); 21c(14); 21f(42); 26a(36); 27a(21); 30a(27); 33a(11-12);36a(89): (91); 47c(2-3); 70(22); 76a(61); 90a(9); 92b(6-7); 95g(2); 104a(3-4); 106b(10-11); 119(3); 137a(7-8); 139(19-21); 141b(2-5); 177a(3-4): 207(3): 334(6)
UNITED STATES
  National Agencies - 1a(10-21); 1b(167-201); 2(33-38); 6b(15-16)
  State and Local - 1a(4-5); 1d(3); 2a(6); 4c(2); 4d(6); 5a(57-76); 5h(1); 5i(10-16); 5l(1); 5p(1-2); 53(1); 6a(7-8); 7c(5); 10a(7-8); 10e(7); 11b(7-8); 12a(3); 13a(10-12); 13d(1-2); 13e(13-21); 13h(4-7); 14g(6); 15a(10); 15d(7); 16a(4); 16b(6); 17a(25-27); 18a(11); 18f(1); 20a(12); 20d(2-3); 20ag(1); 22a(13-16); 23a(25); 25c(3-8); 25d(2-3), 27a(3); 28c(10); 30a(15-16); 30b(3); 31e(5); 32a(33-36);32f(7); 32ai(1); 32bg(1); 32bi(1); 33a(5-6); 33d(6-7); 34b(5); 35 b(6); 35c(1-2); 35t(1); 36a(4); 37h(1); 38a(18-23); 38b(2); 38e(2-9); 38f(15); 38k(1); 38al(1); 38am(3); 41a(3); 42b(3); 43a(2-3); 43f(2-3); 43g(11-13); 43h(4-10); 46c(29-35); 46az(1); 47d(1); 48d(13-15); 50b(3)
YUGOSLAVIA - 5(21-22); 11(1), (4)

31. BITUMINOUS MATERIALS AND MIXES

ARGENTINA - 1b(26)
AUSTRALIA - 1(146), (153), (157), (177); 6(51); 7a(32), (45); 9(46); 21a(15)
BELGIUM - 1a(22); 3i(11)
BRAZIL - 2j(1); 51(2)
COLOMBIA - 3(13); 9a(19)
CZECHOSLOVAKIA - 3a(16), (21), (28)
DENMARK - 1a(30-31); 4(17-18), (20), (23-24)
FINLAND - 1c(66); 2(135)
FRANCE - 1e(928-930)
GERMANY - 1(39), (55), (165); 2(10); 8(3); 16d(34); 19b(7); 20a(2); 21a(13), (29-30), (32); 26e(19), (24), (30); 28a(12), (27), (31), (33-34); 46b(1-2); 128(8); 207(2); 210(1-2); 237a(1); 252a(4)
HUNGARY - 1(88), (103-104), (139); 3a(6-7), (11-12); 4(1), (7-8), (11-12)
INDIA - 1a(193), (196-198), (201), (222-224); 5a(44), (66), (75), (170); 7(31-32), (39); 9c(13); 11b(9); 13(4-5); 14(8), (19); 16(8-9); 17(3); 26(1); 33(2), (5); 37(5); 42(18)
INDONESIA - 1a(1), (4), (29), (33), (44); 1b(8)
IRELAND - 2a(14), (17); 8(40), (105), (118)
ISRAEL - 1f(39)
JAPAN - 1a(4), (76); 1g(7); 2a(76); 8a(20), (47); 13(32), (35), (43-44); 21(16); 26(10-11), (15-18); 27(1-2); 29(36); 68(1); 75(2), (4), (7); 79(7); 85(2); 115(2-3)
KENYA - 2(17)
KUWAIT - 1b(32); 5(1)
MEXICO - 1a(193), (196)
MOROCCO - 1a(25), (42); 1d(13)
NETHERLANDS - 1(51), (66), (68), (73), (83), (97-98); 3b(7), (9)
NEW ZEALAND - 3a(67)
NORWAY - 16(5), (7-8)
PHILIPPINES - 1b(20-21)
POLAND - 5b(5)
ROMANIA - 1a(39); 2(3-4), (14), (34), (44)

SOUTH AFRICA - 1a(77-78);9a(23); 14b(13)
SPAIN - 2a(149); 8(10)
SWEDEN - 1(388); 100(1)
SWITZERLAND - 1a(22), (27), (29), (32); 1c(7); 2f(5); 4(16-18), (20-21), (23), (27), (29); 8l(1); (21(1-2)
TUNISIA - 1a(2), (4)
TURKEY - 1a(38); 10(1)
UNITED KINGDOM - 1a(665), (701); 11(18-20); 69c(71); 137a(12)
UNITED STATES
  National Agencies - 1a(22): 1b(202-219); 2(39-40)
  State and Local - 1a(6): 3a(7-8); 3c(4-5); 3g(1-3); 4d(7); 5a(77-79); 5dr(1); 6a(9-13);7a(6); 9d(11-14); 10a(9-11); 13e(22); 14g(7); 15a(11), (13); 15d(8-9); 15a(5); 18a(12-15); 18d(1); 20a(13-14); 20c(3-7); 20y(1); 22a(17-20); 23a(12-14); 24a(6); 24d(1); 26d(6-7); 30a(17-18); 31c(4); 33d(8); 35e(12-14); 35s(1-2); 36g(2); 38a(24-30); 40h(1); 41a(4); 43g(14-15); 43h(11-12; 44a(6-7); 44e(1); 48a(2-4); 48e(1); 50b(4-5); 51m(31)

YUGOSLAVIA - 1b(17); (20), (22); 2(16); 3(21-22); 3(28); 3(30); 3(34); 3(48-49); 5(1-2); 5(7)

32. CEMENT AND CONCRETE

AUSTRALIA - 5a(27); 6(60-61; 7a(28), (47); 8a(40), (59); 9(44), (53), (58-60); 10f(6), (11); 11a(27-28); 12c(22); 14a(11), (13); 16a(73); 17a(21), (34)
BRAZIL - 2a(72); 6b(12); 26(10)
FRANCE - 1e(942)
GERMANY - 1(117), (156); 2(12); 7(2); 16a(10), (14-16, (21); 16b(2), (4); 16c(11-12); 16i(4); 19a(24), (41), 49-50), (52); 19l(1); 21b(33); 24a(12): (20), (26), (31); 26g(7); 26h(6); 26k(31), (64); 26q(1); 28r(7-9), (11); 33e(3), (34), (46), (50-51); 33k(4), (9); 47(10-11), (14-17); 57(6); 149b(1-2); 158(3); 217(1)
HUNGARY - 1(59-60), (105
INDIA - 1a(149), (214-15); 1b(14); 5a(103), (141), (171-2); 8a(22); 17(2); 20(1-2), (4-6), (8-10); 28(1), (3-7); 42(17); 47(4); 49(5-9)
IRELAND - 2a(18)
JAPAN - 2a(77-78); 8a(3), (25), (31), (39), (58-59), (68); 13(55), (70); 15(8); 17a(17-18), (28-30), (46-47); 21(10); 27(7); 29(6), (42); 37(31-33); 37(43); 75(3); 78(4-6); 79(3); 82(15); 90(2); 101(1); 105(7); 106(4), (6); 113(2)
NETHERLANDS - 1(102)
NEW ZEALAND - 2a(59)
NIGERIA - 4(20); 8(7)
PAKISTAN - 9(5)
SOUTH AFRICA - 15a(23)
SPAIN - 2b(27-28), (31)
SWITZERLAND - 1g(2)
THAILAND - 3(88)
TURKEY - 4(39), (48-49(; 10(2-3)
UNITED KINGDOM - 1a(682); 20a(25); 27a(20); 32a(23), (25); 36a(90), (93); 96a(4); 119(2); 137a(6), (9-10)
UNITED STATES
  National Agencies - 1a(23-25); 1b(220-232); 2(41); 6b(17-19)
  State and Local - 1a(7-9); 3g(4); 4d(8); 5a(80-84); 51(17-18); 5p(3); 5dv(1);9a(12-13); 9d(15); 10e(8); 11b(9); 13d(3-4); 13e(23-25; 13f(10); 13j(2); 13n(8-10); 14g(8-9); 15a(12); (14-15); 15d(10); 16a(6); 16b(7); 17a(28); 18a(16-19); 18c(2-3); 19a(4); 20a(15); 20b(1); 22a(21); 22e(2); 23a(15); 29d(2); 32f(8); 32i(2); 33a(7); 33d(9-10); 34a(2); 36a(5); 38a(31); 38f(16-20); 38am(5-7); 39a(1); 43g(16-18); 43h(13-15); 43t(1); 44a(8); 46c(36-37); 48a(5); 48d(16); 49a(7-8)

YUGOSLAVIA - 2(17)

33. CONSTRUCTION

AUSTRALIA - 1(103), (118), (181); 6(27), (35), (49), (58); 7a(44); 8a(22-23); 9(48); 10f(19); 18e(5)
BRAZIL - 2a(53), (58), (73); 8a(2)
CZECHOSLOVAKIA - 3a(3), (13), (22-25)
DENMARK - 1a(24); 2a(51)
ETHIOPIA - 1(71)
FRANCE - 1e(935)
GERMANY - 16a(20); 16d(33); 17l(2); 24a(21); 28a(20); 33d(2); 51(9); 54(11); 136(3); 156(1); 166(5), (7); 168(1); 212(3); 237(3)

HONDURAS - 2(16)
HUNGARY - 1(140); 6(3), (8)
INDIA - 1a(134), (147), (177), (205-206); 1b(16), (36), (38); 5a(87), (139), (158); 8a(29); 25(18); 36(1-2); 42(10)
INDONESIA - 1b(3)
JAPAN - 1b(51), (155); 1p(2); 2a(79); 4(14), (23), (31); 6a(2); 7(16); 14(6); 16c(1); 21(34); 37(21), (30), (35-38); 78(7); 82(6-8), (11-12), (18), (21); 96(1); 114(1); 115(1); 125(3)
KUWAIT - 1b(33)
MEXICO - 1a(139), (184), (197); 2g(1-2), (4)
MOROCCO - 1a(26)
NETHERLANDS - 1(94)
NEW ZEALAND - 1c(10); 2a(60)
NIGERIA - 2(38)
NORWAY - 16(6)
PAKISTAN - 9(6)
POLAND - 4b(7)
PORTUGAL - 2b(23)
SOUTH AFRICA - 1a(66), (74), (131), (144), (148); 14b(14); 31a(2)
SWEDEN - 100(2)
SWITZERLAND - 2f(2); 8q(2-3); 8v(1); 13(1); 19(1)
TUNISIA - 1a(6)
TURKEY - 4(40)
UNITED KINGDOM - 18a(17); 26a(35); 30a(28); 36a(92)
UNITED STATES
  National Agencies - 1a(26); 1b(233-238); 2(42-44); 5(3); 6b(20-22); 6c(1); 11f(2)
  State and Local - 4d(9); 5a(85-89); 5ap(1); 6f(1-3); 7a(7); 9d(16); 10a(12); 13ad(1-2); 15a(16-17); 15d(11-13); 15e(9); 18a(20-23); 20a(16); 20d(4); 20j(1-2); 20l(2); 22a(22-23); 32a(37-38); 32i(3-4); 35s(3); 36a(6); 38a(32-33); 38f(21-23); 40e(1); 43g(19); 43h(16-17); 44a(9); 46c(38-44); 48a(6-7); 14f(1); 52a(3)
YUGOSLAVIA - 1b(15-16); 3(33); 5(14); 5(19-20)

34. GENERAL MATERIALS

ARGENTINA - 3(32)
AUSTRALIA - 1(174), (122), (143); 5a(11), (35-36), (55); 7a(31), (37), (41); 8a(27), (32), (49), (52); 8d(6), (10); 10i(1-2); 11a(33), (38); 14a(10); 18f(1), 29a(2); 29b(2); 59(9); 101(1)
BELGIUM - 3g(9-11); 23(29)
BRAZIL - 2a(56), (74); 76(3)
COLOMBIA - 9a(20)
CZECHOSLOVAKIA - 3a(18-19), (29)
DENMARK - 1a(17), (37)
ETHIOPIA - 1(23); 1(37-38)
FINLAND - 1c(64-65); 2(126), (128), (130)
FRANCE - 1e(926), (943)
GERMANY - 1(2-3), (28), (78), (84), (87), (89), (143), (157-158), (171); 2(6), (11), (13); 7(4); 16a(7), (13), (18); 16j(1); 19a(27); 19k(1); 22(3); 26e(21); 26h(7), (14); 26k(7-8), (10), (16-17); 28a(30); 28c(4); 28k(58); 28r(1-6), (10); 33e(19), (21), (27), (33), (38-40), (44-45), (52); 33k(1), (10); 44(3); 62(7-8), (10-11), (13); 113(2), (12); 128(7); 161(2); 193(1); 194(1-2); 209(1); 211(1); 212(4); 228(1-3); 237(1-2)
GHANA - 1a(67-68)
HUNGARY - 1(61)
INDIA - 1a(152), (174), (184), (200); 5a(64), (142), (161), (173-175); 7(19); 18(7); 32(18); 42(11); 48(1)
IRAQ - 2(5)
IRELAND - 8(66); 12(1)
ITALY - 24(7)
JAPAN - 1a(27), (35), (47-48), (77); 14(8); 21(14); 37(22); 75(1), (5); 79(4-5); 82(22); 93(2); 118(1)
MEXICO - 1a(170), (209-210); 2f(26-28)
NETHERLANDS - 1(64-65), (70), (85), (87), (95-96), (99-100)
NEW ZEALAND - 1b(38); 3a(68)
NIGERIA - 4(11); 8(4)
NORWAY - 3a(63); 20(1)

POLAND - 2(106)
PORTUGAL - 1f(3)
ROMANIA - 1a(44), 2(5), (28); 2a(5); 2c(2); 3(3-4), (7)
SOUTH AFRICA - 1a(149), (157-158), (163-164); 5(10); 8b(2)
SPAIN - 8(11)
SWEDEN - 1(389), (393); 53(6)
SWITZERLAND - 1c(16); 4(19); 7(5)
THAILAND - 3(89)
TUNISIA - 1a(11)
TURKEY - 4(50-51)
UNITED KINGDOM - 6(21), (25); 10(10); 50(113); 69c(70), (72); 123b(10-11), 137a(5); 227(5)
UNITED STATES
  National Agencies - 1a(27)-(33); 1b(239)-(266); 2(45)-(52; 6b(23-24); 6c(2); 9(32)
  State and Local - 2a(7); 3a(9-10); 3c(6); 3g(5); 4c(3); 4d(10); 5a(90-110); 5g(1); 50(5); 5di(1); 6g(10); 7a(8-9); 7c(6); 10a(13-14); 12a(4); 13a(13); 13e(26); 13ae(1); 14a(4); 14g(10); 15a(18-19); 17a(29-32); 18a (24-28); 18c(4); 20a(17-21); 20d(5); 20v(2); 21g(19); 21as(2); 21bi(1); 21bj(1); 22a(24-31); 22e(3); 22z(1-2); 23a(16-17); 24a(7-8); 25a(4); 30a(19-22); 30s(1); 32a(39-47); 32k(18-19); 32q(1); 33d(11-12); 35h(1); 36a(7); 36c(3); 36g(3); 37a(3-4); 38a(34-45); 38f(24); 38v(1-4); 38ah(1-2); 42c(1); 43a(4); 43t(2-3); 43ad(10); 43ah(1); 46c(45-48); 46aj(1); 47e(9-10); 48a(8-9); 48d(17-18); 49d(8); 51a(3); 51g(2)
YUGOSLAVIA - 3(31); 3(41)

35. MINERAL AGGREGATES

ALGERIA - 1a(4)
AUSTRALIA - 1(104), (126), (147), (154); 3c(9), (11); 5a(35); 6(53); 8a(12), (17), (31), (46), (58); 10a(50); 10f(22); 21a(6); 23(4); 38(2); 41(3-4); 50(9); 53(4); 106(1)
BRAZIL - 2a(57), (75); 65(1)
CHILE - 2a(50-51)COLOMBIA - 23(11)
DENMARK - 1a(35), (39)
ETHIOPIA - 1(72)
GERMANY - 1(113), (115); 16d(37-38), (43); 17c(24); 19b(8); 20a(3); 21a(31), (33); 24a(15), (22); 28a(15), (21), (23), (32); 31(5); 44(4); 52(4); 128(9); 149(4); 212(2), (5); 224b(1); 251(1); 302(1); 303(1)
INDIA - 1a(194-195); 5a(176-177); 7(22), (24); 8a(15); 13(7-8); 14(24); 16(7), (10); 17(1), (5); 18 (14-16)
INDONESIA - 1a(10)
IRELAND - 1a(11); 8(37)
JAPAN - 1i(2); 8a(51); 28(25); 29(14), (35); 30(6); 45a(2), (4); 79(2), (8); 83(3)
KENYA - 1a(18)
MOROCCO - 1a(24), (29), (41); 1d(14)
NETHERLANDS - 1(103); 2a(4)
NEW ZEALAND - 1f(6-8); 11(9)
NIGERIA - 4(25)
PAKISTAN - 7a(22-23)
ROMANIA - 3(2)
SOUTH AFRICA 1a(71); 13(5), (12-13); 25(4), (10)
SWEDEN - 1(392)
SWITZERLAND - 20(1)
TURKEY - 4(42-42)
UNITED KINGDOM - 1a(702-705); 96a(6); 140a(40)
UNITED STATES
  National Agencies - 1a(34); 1b(267-71); 2(53-54)
  State and Local - 3a(11); 5a(111-112); 13e(27); 14c(1); 14g(4); 18a(29-31); 19a(5); 23a(18); 24a(9); 32ax(1); 35a(5); 35e(15); 43g(20); 46c(49); 51m(3); 52c(4)
YUGOSLAVIA - 2(15)

40. MAINTENANCE

ALGERIA - 1a(8); 1b(3)
AUSTRALIA - 1(14), (135-136), (162); 5a(9); 8a(35); 8c(3); 10f(17), (31); 49(5); 60(2)
BRAZIL - 2a(52), (76); 7(39)
CHILE - 1c(3)
COLOMBIA - 9a(21)
CZECHOSLOVAKIA - 3a(7); 4(1)
FINLAND - 2(129)

GERMANY - 1(77), (105), (124), (150); 2(9); 4(8); 19a(48), (51); 19h(1); 21b(28); 24a(27); 24b(16); 26h(13); 28j(21); 33e(41); 203(2)
HONDURAS - 1f(9-10)
HUNGARY - 1(107), (109), (141)
INDIA - 1a(199), (217); 47(12)
INDONESIA - 1a(15)
JAPAN - 1a(41),(50), (78), (92); 1b(113); 1m(2); 2a(53); 4(27); 8a(19): (23), (38), (41), (52), (61), (69); 21(22), (35), (43); 26(19); 63(1-4); 78(8); 103(1); 105(8); 107(1); 126(1)
MEXICO - 2e(17)
MOROCCO - 1e(1)
NETHERLANDS - 1(69); 3b(15), (18)
NEW ZEALAND - 21(3); 21(4)
NIGERIA - 2(5)
NORWAY - 1(113), (122-123); 3b(13)
ROMANIA - 2(15), (45)
SOUTH AFRICA - 1a(67), (142), (168); 4(2)
SWEDEN - 1(394), (398), (400), (404-405); 8(28); 42(7), 73(10)
SWITZERLAND - 1g(1); 2f(1); 28(1); 37(1)
TUNISIA - 1b(15-16); 2(2)
TURKEY - 11(1)
UNITED KINGDOM - 1a(707)
UNITED STATES
  National Agencies - 1b(279-312); 2(55-60); 4(22-25); 6b(25-27)
  State and Local - 1d(4); 4d(11); 5a(113-117); 5i(19); 5x(1); 6a(14); 6g(11); 7c(7); 10f(3); 13a(14); 13e(28); 13j(3); 14g(11-12); 15a(20-21); 15d(14); 16a(7); 17a(33); 17d(3); 18a(32); 18c(5); 19e(4); 21a(7-8); 21bg(1); 22a(33); 22d(1); 23a(19); 27a(4); 31c(5); 32a(48-53); 32f(9); 33d(13); 35a(6-7); 36a(8); 36d(1); 37a(5); 37e(4); 41b(1); 43g(21-22); 44a(10-13); 46c(50-51); (47e(11); 49a(9-10); 50b(6)
YUGOSLAVIA - 1b(24-26)

41. CONSTRUCTION AND MAINTENANCE EQUIPMENT

ALGERIA - 1b(9)
AUSTRALIA - 1(166); 8b(6-8); 9(29), (34); 10f(20); 17b(41); 81(1)
BRAZIL - 6a(39)
FRANCE - 1e(944)
GERMANY - 1(106), (136). 16c(9); 26g(9-10); 33d(1); 171(1); 241(2); 257(1)
INDIA - 1a(207-208); 1b(40); 9b(23); 16(11)
INDONESIA - 1b(14)
JAPAN - 1a(95); 1b(81), (130), (133), (158), (160), (170); 1g(9); 1m(1), (3-4); 4(2); 4(12), (15), (18-19), (26), (28); 16a(31), (33-34); 82(3), (5), (13), (23); 85(4); 110(1-2)
MEXICO - 2g(5)
NORWAY - 3b(14-15)
SOUTH AFRICA - 1a(143), (165)
UNITED STATES
  National Agencies - 1a(35); 1b(272-278)
  State and Local - 1j(1); 5a(118-119); 5cg(1) 6f(4-5); 7c(8) 13e(29) 14g(13): 33d(14) ; 38a(46); 43h(18); 43t(4); 48a(10)

51. SAFETY

AUSTRALIA - 1(145), (180); 5b(12); 2b(14); 8g(2), (11-12); 9(27), (49), (64-65); 10e(5); 12f(3-5); 16a(83); 16b(24); 18e(9); 20(2); 24(7); 28a(7), (37), (42), (44-45), (57-58), (60), (71-72), (76), (79-82), (85); 31(9); 47(6); 48(2); 52(4), (7-8), (10), (12-13); 58(16-18); 59(1), (5), (7), (17), (20), (22), (25-26), (30), (33); 59(39-40), (42); 65(9); 69(6), (15-16); 70(1); 88(1); 98(1); 103(3); (105(1); 108b(1)
AUSTRIA - 3b(33)
BRAZIL - 15a(57-59)
COLOMBIA - 9b(18-19)
CZECHOSLOVAKIA - 2(4)
DENMARK - 2a(56); 6(12)
FINLAND - 2(114), (116), (119-120), (122-123); 3(41), (43); 5(55-56); 12(1-4); 14(2)
FRANCE - 15(328), (333-334), (338-342); 48(38)

GERMANY - 1(41), (148), (169); 10(8); 17c(25), (38); 17j(2-5), (9-11), (13), (15); 19d(13); 19j(11), (13); 21c(12); 23d(1); 26c(3); 26e(25-26), (28), (31); 27c(1-2); 28s(2); 29c(2-3); 34(16), (27); 35(5); 40(8-9), (11); 60(17); 92(3); 100a(4-6); 125(1); 144(2); 174a(2); 175c(3), (6), (10), (12-13); 176a(2); 180(2); 200(3); 224(1); 231(5); 233(2); 235(2), (7); 239(1); 259(1), 260(1); 262(1); 263(1), (3); 266(1); 269(1); 270(1); 271(1); 273(1); 274(1-2); 275(3); 280(1); 286(1-2); 288(1); 289(1); 291(1); 292(1); 293(1); 294(1); 295(1)
GREECE - 3c(19)
HUNGARY - 1(1), (62), (89), (110), (142-146); 3(3-4)
INDIA - 1a(178-179); 5a(179); 11a(31); 13(3); 18(6); 32(19-20); 46(6)
IRELAND - 1c(11); 8(90-91), (103), (112), (119), (121-122)
ISRAEL - 1f(35), (42), (55); 2a(85-87, (89), (91), (93), (95), (98); 20(5)
ITALY - 23(10-11)
JAPAN - 1b(15), (123), (173), (199); 1n(4); 2a(54); 5(16), (24), (36), (39-41),(44), (52); 8a(36); 13(47), (53); 21(13), (26); 22a(58), (78), (102); 56(5); 62(1-2), (4-5); 105(9)
MOROCCO - 1d(6); 1e(4)
NETHERLANDS - 2c(1), (9); 4b(1); 5(30-31), (38-39), (41-49), (53), (58), (60-61); 6(12), (15-16), (18); 8b(4); 15a(3), (6)
NEW ZEALAND - 2a(61); 4a(72-73); 26(2); 40(1)
NIGERIA - 9(2); 9(6); 10(2)
NORWAY - 1(111), (125); 3a(61); 5a(28); 15(2)
PORTUGAL - 1d(2-4), (6-7); 5(1), (3)
SOUTH AFRICA - 1a(86), (88-89), (94-95), (99), (107-108, (117), (137), (139), (141), (151); 5(7); 7a(1-2); 8b(3), (8); 9a(24); 12b(12); 22(3); 27(3-4), (6-9), (11); 30(2); 32(3)
SPAIN - 4(115-116)
SRI LANKA - 5a(13); 24(1)
SWEDEN - 1(382-384), (386-387), (390); 2(38); 9(45); 11(41); 28(9); 48(5); 54(8); 56(12-13); 93(2)
SWITZERLAND - 1a(16); 2a(1); 22(1)
TUNISIA - 1b(17); 2(3)
UNITED KINGDOM - 1a(666), (675), (720-722; 16a(68); 25g(39); 140a(39); 205(4)
UNITED STATES
  National Agencies - 1a(36-40); 1b(313-354); 2(61-63); 3(4-5); 5(4-5); 6a(1); 7(1)
  State and Local - 1b(1); 2d(1); 3a(12); 3i(1); 4b(1); 4d(12-13); 5a(120-123); 5b(1-4); 5c(1); 5e(1-2); 5f(1-17); 5i(20); 5l(2-3); 5v(1-3); 5ae(1-2); 5at(1-2); 5bw(1); 5dg(1-2); 5dn(1); 5do(1); 6a(15); 6b(1); 6d(3); 6i(1); 6n(1); 7a(10); 7c(9); 7g(1); 7m(1); 7p(1); 9e(1-3); 9h(1); 9p(1); 10k(1); 11a(5); 11b(10-11); 12a(5-6); 12d(1); 13a(15); 13e(30); 13g(1-5); 13i(1); 13m(1-4); 14b(1); 14d(2-9); 14r(1); 15a(22); 15b(1); 15j(1); 16a(8); 16f(1); 17a(35-37); 17c(1); 17f(1-2); 18a(33); 18b(1); 18c(6); 18k(1); 20i(1-2); 20x(1); 20ah(1); 20ai(1); 21g(20); 21k(4); 22a(32); 22f(6-8); 22m(2-9); 22ab(1); 22ad(1); 22af(1); 23b(1-4); 24a(10); 25l(1); 25n(1); 27a(5); 29a(1); 30a(23-24); 30q(1); 31g(1-6); 31i(1); 32c(1-10); 32k(20-21); 32m(1); 33a(8); 33e(8-16); 34a(3); 35h(2); 36b(1); 36d(2); 37e(5); 37i(1); 38a(47-48); 38f(26); 38ac(1-4); 38ag(1-2); 40a(1-4); 40g(1-2); 41a(5); 41e(1); 42b(4); 42c(2); 43g(23-26); 43t(5-6); 43z(2); 44b(1-2); 44c(1); 45e(2); 46a(1); 46c(52-62); 46d(11-13); 46e(1-2); 46j(1); 46aj(2-3); 46ak(1-7); 46ar(1); 46ay(1); 47l(1); 49d(9); 50a(4); 51g(3); 51ad(1); 51bb(1); 51be(1)
YUGOSLAVIA - 6(9); 7(1); 10(1); 10(5); 12(1)

52. HUMAN FACTORS

AUSTRALIA - 1(131), (133-134), (148), (160), (169), (171); 3e(6); 11b(1); 12f(7); 14c(5); 16b(1), (12), (14), (16), (28), (32); 16c(15); 16f(2-3); 18e(3-4), (7), (10-11); 24(6), (8); 28a(38), (61-63), (68), (70), (73), (83); 28b(1); 31(2); 51(1-2), 59(23), (29), (31), (37); 82b(1); 96(1); 97(2); 99(1); 100(1); 109(3); 111(1)
AUSTRIA - 3a(37-42); 3f(1)
DENMARK - 6(8), (10-11)
FINLAND - 2(109); 5(57); 8b(1-3)
FRANCE - 1e(939); 15(330-331), (343)
GERMANY - 1(175); 16l(2-3; 17c(35); 17j(8); 19c(14); 23c(1-2); 24i(7); 28c(7); 28q(4-6), (8); 32b(1); 32c(1); 34(17), (22-24), (28); 40(10), (12); 148b(1); 173(2); 173d(2); 175a(6); 175b(1); 175c(11); 220(4), (6); 225(1); 240(1); 242(1); 246(1-3); 247(1); 248(1); 258(2); 268(1-2); 281(1); 285(1); 286(3); 290(1)
GHANA - 1a(69)
HUNGARY - 1(63), (66), (147-148)
INDIA - 1a(180), (212); 5a(151); 32(21); 39(5)
IRELAND - 8(120)
ISRAEL - 2a(94); 18(13-15); 20(6)

JAPAN - 1b(136), (163); 5(14)
NETHERLANDS - 2c(10); 5(40), (57), (63)
NEW ZEALAND - 2h(1); 4a(74); 7b(3); 43(1)
NORWAY - 7a(5)
SOUTH AFRICA - 1a(91-92); 9a(15); 22(5-6); 27(12)
SWEDEN - 1(365); 8(27); 81(2)
SWITZERLAND - 1f(15)
TURKEY - 4(43)
UNITED KINGDOM - 1a(685-686); 25g(41); 34d(12); 48h(1); 50(120); 69g(2); 74(23); 138(33); (158(20); 168(7), (9); 176(6)
UNITED STATES
  National Agencies - 1b(355-59); 11a(5-6); 11h(1)
  State and Local - 4d(14); 5aa(1); 5ad(1-2); 5bd(8); 5bf(1-6); 5cw(1-2), (4); 5dj(1); 5dm(1); 7h(4-5); 90(2); 13a(16); 13e(31-34); 13j(4); 14d(10); 17a(38); 18i(1); 20c(1); 20p(1); 20ad(1); 20ak(1); 21c(1); 21m(1); 21ab(1); 22m(10-25); 29e(1); 32c(11-14); 32x(1); 32be(1); 33b(1); 38f(29); 41c(1); 41e(2); 43t(7-9); 43w(1); 44b(3-6); 44g(1); 49d(10); 51q(1)
YUGOSLAVIA - 7(2-10); 10(2), (6); 20(1)

53. VEHICLE CHARACTERISTICS

AUSTRALIA - 1(95), (120), (137), (139), (155), (163); 3e(1), (3-5); 3f(1); 10e(7); 10f(21); 12d(4); 12f(6); 16b(26), (29); 17a(36); 17b(3-5); 18d(2); 28a(39), (41), (43); 28a(64-65), (67), (69), (74-75), (77-78), (84), (86); 28b(2); 30(16), (31(12); 58(12); 59(24), (38); 60(4); (97(1); 103(1); 107a(1); 112(1)
BELGIUM - 10(13)
BRAZIL - 6b(7); 35(23)
COLOMBIA - 3(14)
FINLAND - 2(107); 5(58); 11(21); 13(2)
FRANCE - 1d(232); 1f(53); 48(36-37)
GERMANY - 1(159); 16q(2); 17c(27); 17j(7); 19c(13), (15), (17-20), (22); 21f(3); 24i(6); 26a(31); 26e(27); 28j(26); 33a(35); 119(6), (8-11); 144(3-4); 145(3); 146(6); 159(4); 175c(5), (7), (14-15); 175d(2), (4-5), (9), (11-12); 175e(1)
INDIA - 1a(169); 7(44); 25(17)
ISRAEL - 1f(33); 2a(90), (97), (99); 19(19-20); 30(1)
ITALY - 28(1)
JAPAN - 5(38), (53); 13(49), (57-58), (71); 18b(6); 21(36); 102(5)
MEXICO - 2f(30), (38); 8(2-3)
NETHERLANDS - 3c(13-15); 5(35), (52); 6(2), (6-7), (11), (13-14), (17)
PAKISTAN - 9(7)
PERU - 1c(7)
POLAND - 6(22)
PORTUGAL - 5(2)
SOUTH AFRICA - 1a(114-116), (140), (150), (153), (160); 13(10)
SWEDEN - 1(364), (369_375), (378-381); 8(30-32); 97(1-2); 104(1); 107(1)
UNITED KINGDOM - 1a(680), (684), (687); 2e(26); 6(13), (20), (22), (24); 21u(3); 23(7-9); 30c(7); 50(114-119); 69g(8-9); 82e(4); 93(77), (79-80); 95g(1); 101a(16); 160(10); 219(6); 255(8); 347(1)

UNITED STATES
  National Agencies - 1a(41-42); 1b(360-372); 2(64-65); 4(26-27); 5(6-8); 6b(28); 6c(3); 11a(7); 11d(5); 12(1)
  State and Local - 1g(1); 1h(1-2); 2b(6); 3c(7); 3f(1-2); 3k(2); 5a(124); 5g(2-4); 5i(21); 5p(4); 5w(1-4); 5aa(2); 5ad(3); 5am(1-10); 5aw(1); 5bd(9-10); 5bf(2-4), (7-13); 5bi(1); 5bj(1); 5bm(2-3); 5bz(4); 5ca(1-2); 5cc(1-3); 5cj(2-3); 5cn(1); 5cp(1); 5cu(1); 5dq(1); 5dw(1-7); 6k(1); 7o(1); 7q(1); 9e(4-5); 9p(2); 11b(12); 13e(35); 13s(2); 15a(23); 16e(1); 19a(6); 20v(1); 21g(21-23); 21n(1-3); 21s(1); 21y(2); 21ba(1); 22d(2); 22e(4-6); 22g(1); 22m(26-42); 22q(1); 22z(3-7); 22ae(1); 25f(1-2); 28d(1); 28f(1); 30a(25); 30g(2-3); 30n(1); 31e(6-8); 32k(22); 33q(2); 33s(1-9); 32ad(1); 32al(1); 32bd(1); 33e(17-18); 35e(16); 36c(4);36h(1); 38f(27-28; 38o(1); 38ak(1); 43t(10-19); 44b(7); 46c(63-64); 46l(1); 46ae(1); 46aj(4-5); 49d(11-14); 49e(1); 51g(4); 52c(5)

54. OPERATIONS AND TRAFFIC CONTROL

AUSTRALIA - 1(86), (108), (119), (121), (132), (142), (170), (172), (178); 3c(12-13); 4(11), (23-24); 5a(52), (65); 5b(13-18); 6(2-3), (64-66); 7b(1-3), (6), (8), (13); 8g(7-8), (10); 10j(1); 16a(64-65); 16b(9), (27); 16c(9), (13); 17a(33); 18b(20-21), (33), (39), (43), (50); 18e(8); 25(21-22); (31(13); 47(5); 50(14); 54(5); 59(3), (27-28); 59(34-36; 69(1), (5), (7); 71(3), (6); 72(1); 73(6); 74(2); 75(1-2), (4); 80(7); 82(2); 84(1-2); 94(1); 110(1)

AUSTRIA - 3e(3)
BRAZIL - 2a(51), (77-85); 35(24); 69(1)
CHILE - 2d(16); 3b(7)
CHINA-TAIWAN - 11(9-10)
DENMARK - 5(15-16); 6(5)
FRANCE - 1f(13); 15(335)
GERMANY - 1(42), (93), (107), (109), (123); 16e(10), (24); 16p(1); 17c(21), (29), (33-34), (37); 18a(5); 19j(5), (7), (9-10), (12); 21c(15); 24b(7), (18-19); 26a(29-30), (38); 26e(22); 28q(3); 28s(3-4); 33a(45); 56(4); 92(6); 94(23), (25-27), (30-31), (33-34), (38); 118(3); 119(7); 122(11); (13); 145(2); 149c(1), (3); 173(1); 173c(1), (8); 198(2-3); 203(1); 230(1); 235(1), (4); 236(2-3); 245(1); 297(1)
HUNGARY - 1(3), (18), (67-71), (112-117), (149-153); 7(5), (11), (16-19)
INDIA - 1a(182), (183), (211); 11a(32); 11d(10); 32(22)
INDONESIA - 1a(12), (41); 1b(11)
IRELAND - 1e(12), (15); 8(55), (92), (107), (111)
ISRAEL - 1f(34), (41), (44-45), (57); 2a(88), (92); 27(2)
ITALY - 3(70-74); 25(5)
JAPAN - 1b(120), (162); 1g(8); 2c(1); 3a(18); 5(10), (25), (27), (31-35), (43), (45-48), (54-56); 13(24), (31), (48), (59); 20b(12); 21(37-38); 23b(15); 24(17); 51(5); 55(3); 56(4); 60(2); 85(3); 104(3); 127(1)
MEXICO - 2f(39)
MOROCCO - 3(2), (6); 9(2); 11(1); 12(1)
NETHERLANDS - 2b(10); 2c(7), (11); 3c(16); 3d(10-11), (14); 4a(2-3), (5-6); 5(59), (62); 8b(2-3)
NEW ZEALAND - 4a(75-77); 13(5); 14(2); 18(10); 42(1); 47(2)
POLAND - 6(23)
PORTUGAL - 1b(1)
ROMANIA - 2(46)
SOUTH AFRICA - 1a(113), (127-128), (130); 7a(3-4); 8b(9), (12), 9a(11), (25-27); 12b(17); 13(14-15); 14b(15); 26a(2-6); 28(11); 32(4)
SRI LANKA - 4(11-14); 22(2); 24(2)
SWEDEN - 1(403); 2(37); 11(40); 13(36); 20(15)
SWITZERLAND - 1f(8), (13); 8f(3); 8h(1-4); 8y(2); 9(6), (11); 23(1), 30(1)
TUNISIA - 2(1)
UNITED KINGDOM - 1a(676), (678), (688), (698); 138(31); 158(22); 160(9); 180(8)
UNITED STATES
  National Agencies - 1a(43-54); 1b(373-457); 2(66-73); 4(28)
  State and Local - 5a(125-128); 5i(22-25); 5dl(1); 5dt(1); 6a(16); 7a(11-12); 9d(17); 13a(17-18); 15a(24-25); 15d(15); 17a(39-43); 18a(34-35); 18c(7); 20i(3); 21g(24-25); 21ap(17-18); 22f(9); 24a(11); 30a(26-30); 31c(6); 32a(54-58); 32f(10-12); 32x(2); 33d(15); 35e(17-21); 35f(1-2); 35ae(1); 37a(6); 38a(49); 38an(1); 43a(5-6); 43b(1); 43t(4); 43g(27-31); 43ag(1); 44f(1); 46c(65-72); 46ad(4); 48a(11); 49a(11)

YUGOSLAVIA - 8(1); 9(6)

55. TRAFFIC FLOW, CAPACITY, AND MEASUREMENTS

AUSTRALIA - 1(101), (123), (149), (156), (179); 3f(2); 5b(19); 6(63); 7b(4); 8e(2), (4); 8g(3-6), (9); 9(24); 10c(32-33); 10j(3); 13a(6); 16a(66-68), (78-79), (81); 18b(29), (31), (40), (44), (47); 25(28); 28a(66); 29c(1-2); 34(16), (19); 56(11); 58(19); 59(41); 74(3); 82(3), (9); 90(1); 109(1-2)
AUSTRIA - 3b(31)
BRAZIL - 15a(60)
CHILE - 2d(7)
COLOMBIA - 9b(20-21); 23(12)
DENMARK - 2a(49); 7(4) (7)
ETHIOPIA - 1(41); 1(73)
FINLAND - 1a(14); 2(110) (118) (124); 3(44); 15(2)
FRANCE - 1d(222-223); 1e(940)
GERMANY - 1(94), (127); 16d(35); 16e(12), (21), (25-26), (28); 17c(15), 28; 19c(23); 19d(9); 26a(20-21), (26-28), (32-35), (37), (39-40); 26e(18), (23); 28f(14); 28t(1); 33a(27-28), (31-33), (37-42), (44); 94(24); 117(3); 122(7-8), (10); 152(2); 173a(6); 192d(1); 235(5-6); 236(1), (4); 247(2); 258(1); 267(1); 272(1); 275(1).
GHANA - 1a(70)
HUNGARY - 1(21-22), (32-34), (73-74), (118-121); 3e(1), (3); 7(4), (20)
INDIA - 1a(185), 190; 5a(92), (163), (182); 7(43), (46); 9d(2-4); 11a(27), (28), (30), (35); 11d(15); 13(6); 14(29), (30); 22(7); 23(14), (17); 25(8), (12), (15), (20), (27); 34(3); 38(7); 45(3); 46(4), (7), (8); 50(2), (3); 51(2), (3); 55(1), (2).
INDONESIA - 1a(18), (30), (31), (39)

IRELAND - 1a(8), 1c(9), 1e(13); 8(81), (87), (89), (93-94)
ISRAEL - 1f(40)
ITALY - 26(1)
JAPAN - 1b(151); 1f(6), (10); 1g(1); 10(2); 2a(29); 2h(2); 2l(1); 2j(1); 5(28-30), (49), (51), (57-59); 8a(32), (63); 9(20); 12(7); 13(40), (60), (61); 16b(7), (12), (22); 17a(48); 18b(5); 19(23), (28); 20b(11); 21(2-4), (11), (11), (20), 21(44-45); 22a(56), 45a(3); 50(9); 51(1); 56(6); 60(1); 71(2), 85(7); 86(4); 102(6); 104(2).
KENYA - 7(5)
MEXICO - 1a(185); 2b(28); 2c(32), (38); 2f(37)
MOROCCO - 1a(27), 1a(39), 1e(55) 4(3)
NETHERLANDS - 2b(7), (9), (12); 3a(9) (13-15); 3e(12-14); 4a(4); 5(37), (54), (55); 16(1)
NEW ZEALAND - 1l(1); 2a(62)
NORWAY - 1(107) (124); 19(2)
PAKISTAN - 7a(24)
PORTUGAL - 1a(8); 1a(12)
ROMANIA - 1a(20), (38), (49); 2(6), (23)
SOUTH AFRICA - 1a(104) (129) (134); 5(3) (8); 8b(10-11) 9a(28); 11a(19) (25); 13(16) (21); 32(1) (5); 36(3-4)
SPAIN - 2a(151)
SWEDEN - 1(366-367) (376) (385) (406); 2(33)
SWITZERLAND - 1f(6) (9) (17); 8f(4); 8u(2); 8w(3); 8x(1-2); 8y(1); 9(1) (8); 33(1)
TUNISIA - 1b(18)
TURKEY - 1c(22); 4(44)
UNITED KINGDOM - 1a(713-716); 23k(3); 26a(37); 33a(13); 70a(62); 82a(20); 273(5); 334(4)

UNITED STATES
National Agencies - 1a(55-56); 1b(458-473); 2(74-76); 6c(4)
State and Local - 2b(7); 5a(129-132); 5i(26-31); 6a(17); 6g(12); 7c(10); 8a(1); 10a(15-16); 13a(19); 13f(11); 17a(44-45); 22ac(1); 23d(3); 30c(4); 32f(13); 32ai(2); 33d(16); 34a(4); 36a(11); 43a(8); 43g(32-33); 43h(19); 43z(3); 43ac(1); 44d(1); 46c(73); 51aj(1); 51az(1)

YUGOSLAVIA - 3(36); 4(18); 13(2-3)

61. EXPLORATION-CLASSIFICATION (Soils)

ALGERIA - 1a(1); 1b(2)
AUSTRALIA - 5a(24), (56), (63), (67-69); 6(52); 8a(3); 14a(5), 18b(1)
BRAZIL - 2a(86); 6a(37-38); 12a(4); 62(2); 64(1)
CHILE - 2b(4), 2b(5), 2b(6), 2b(7), 2e(1)
COLOMBIA - 9a(22); 23(13-14)
ETHIOPIA - 1(42) ; 1(61)
GERMANY - 21a(28); 28g(8); 33e(11), (37); 100b(1); 249(1)
INDIA - 1a(132), (133), (142), (226-226); 1b(37); 5a(164); 8a(23); 11d(16); 14(20); 27(4), (5); 31(6); 44(1), (6), (7)
IRELAND - 1a(7), (12); 6a(1); 8(101), (110), (115)
JAPAN - 1a(3), (26), (33), (67), (81); 8a(14), (42); 16c(1); 37(27); 42(1); 65(3); 85(6)
MEXICO - 1a(207-208); 2f(31)
NEW ZEALAND - 1b(39); 2a(63); 34(4)
NIGERIA - 4(16); 4(22); 4(26)
PORTUGAL - 1c(3); 1e(1)
ROMANIA - 2c(3-4)
SOUTH AFRICA - 1a(73) (154); 1b(12)
SPAIN - 2b(30)
SWEDEN - 65(4); 73(11)
SWITZERLAND - 1a(19); 7(2), (4)
THAILAND - 3(90-91); 3(93)
TUNISIA - 1a(12)
TURKEY - 4(45)
UNITED KINGDOM - 3e(9-10); 21b(18); 96a(5); 117(15); 140a(34), (38); 227(6)

UNITED STATES
National Agencies - 1a(57-58); 1b(474-487); 2(77); 4(29-30); 6b(29-31); 9(33)
State and Local - 1d(6); 2a(8); 3a(13); 5a(133-134); 5du(1); 7c(11); 9d(18); 13b(1-4); 13e(36-38); 14c(2-4); 15d(16-18); 16a(9); 17a(46-47); 18c(8-9); 22c(13); 25a(5-6); 25k(1); 28c(12); 32a(59); 35e(22); 37a(7); 38am(8); 42c(3); 43t(20); 46d(14); 47o(1); 48a(12); 49d(15)

YUGOSLAVIA - 3(32); 5(16); 14(5-6); 18(1-3)

62. FOUNDATIONS (Soils)

ALGERIA - 1a(3), (7)
ARGENTINA - 1b(27)
AUSTRALIA - 1(141); 3a(35), (37); 5a(12), (16); 8a(15), (26), (43), (55); 9(30-31); 10f(7), (26); 11a(11-12), (18), (25); 12e(4-6); 14a(7), (14); 18b(15), (35-37); 21a(16); 73(8)
BRAZIL - 2a(49); 5(26), (28); 6b(13), 7(40); 26(11-14); 66(1); 78(1)
CHILE - 2a(43), 2a(47), 2a(52); 5(1)
CZEHOSLOVAKIA - 3a(2)
DENMARK - 1a(15); 4(19), (21)
FINLAND - 1c(67) (71); 11(20)
FRANCE - 1e(931-932), (934)
GERMANY - 1(52), (97), (99), (114), (163); 4(1-2), (7); 10(10); 16c(7); 16e(23); 21a(25); 21e(2); 24a(17-19), (23-25), (32), 26f(5-6), (8); 28g(6-7), (9-11); 28j(15-17), (25); 28o(4); 28r(12-13); 33e(24-25); 33i(3-4); 128(5), (10); 131(3); 141(3); 149a(1-3); 207(1).
HUNGARY - 1(76), (124)
INDIA - 1a(136-141), (145), (153), (167), (225), (238); 1b(23-25); 3a(1); [illegible]a(100-102), (140); 7(21), (40-42); 8a(14), 8a(24-27), (31); 9a(15), (17); 9c(10), (11); 11a(4); 14(3); 16(12), 18(5), (8), (12), (13); 22(4); 27(2); 31(3-5); 32(24-26), (33); 33(7); 37(2), (3); 44(5); 48(3), (4)
INDONESIA - 1a(7), (34)
IRAQ - 2(6); 9(1)
ISRAEL - 1f(38) (50)
JAPAN - 1a(21), (44), (66); 1b(6), (54-55), (71), (77), (118), (169), (177), (200); 1i(1); 2a(15), (26), (50), (58): (68); 2b(5); 4(21-22); 8a(15), (26), (28), 8a(33), (49), (54-56), (65); 14(19); 16a(21), (35), (40); 17a(19), (31) (35-37); 19(20); 20a(17); 20b(13);21(17); 22a(38); 23a(17); 28(14-15), (21), (23), (26); 29(38), (40), (46); 31(8); 32(1); 37(23), (41); 42(5); 50(1); 59(1), (2); 66(3-6); 72(3), (6-7); 77(2); 78(1), (9), (10); 79(1); 81(1-2), (4); 82(2), (4), (14); 83(1-2), (4); 87(1-2); 90(1), (3); 100(2); 103(4); 106(2); 116(1); 117(1).
KUWAIT - 1b(34-35); 5(2)
MEXICO - 1a(116), (143), (145), (174-175), (187-190); 1b(2-3), (6-14); 2e(22-23); 2f(6), (8), (15), (18-19), (32), (35); 6a(6)
MOROCCO - 1a(11-12), 1a(18-21), 1a(40), 1d(1)
NETHERLANDS - 1(52), (57), (71-72), (74), (93); 3b(10), (12), (17)
NEW ZEALAND - 1b(40); 2d(6); 46(1)
NIGERIA - 2(35); 4(10); 8(8)
PAKISTAN - 3a(19)
PHILIPPINES - 1b(22)
POLAND - 5a(11)
PORTUGAL - 2b(21)
ROMANIA - 1a(34); 2(7-8), (22), (31-32), (35), (49), (51-52)
SOUTH AFRICA - 1a(75), (79); 4(3); 5(5); 13(18); 19(3); 25(5-8), (11-14); 29(7)
SPAIN - 2a(154), (157)
SWEDEN - 103(1)
SWITZERLAND - 1a(6), (34); 1c(12-13); 2b(8); 10b(1); 10c(1); 35(1)
THAILAND - 3(92); 3(94-98)
TUNISIA - 1a(3), (7)
TURKEY - 4(46); 10(4)
UNITED KINGDOM - 16d(14); 21c(15); 76a(60), 117(16); 337b(1)

UNITED STATES
  National Agencies - 1b(488-496); 6b(32-34)
  State and Local - 4d(15-16); 5a(135-144); 6a(18-20); 7c(12); 10a(17-18); 12c(6); 13a(20); 13e(39-40); 14g(5-6); 15d(19); 17a(48-49); 18a(36); 20a(22); 20d(6-7); 21g(26); 22a(34-36); 30c(5); 31c(7); 31e(9); 32i(5); 33b(2); 35c(3); 35e(23); 36a(9), (12-13); 43g(34); 43aa(1); 46c(74-75); 48d(19-20); 50a(5)

YUGOSLAVIA - 1b(9); 5(3); 5(17-18)

63. MECHANICS (Earth Mass)

AUSTRALIA - 5a(31), (34), (41), (57), (66); 6(50); 8a(39), (42); 10a(1); 10f(10); 11a(29), (35-36), (39)
BRAZIL - 2a(54), (87-89); 6b(14); 17(21); 31(9); 46(2)
CHILE - 2a(48), 2a(53), 2a(54)
COLOMBIA - 9a(23-24); 23(15)
CZECHOSLOVAKIA - 3a(1), (26)
ETHIOPIA - 1(74)
FRANCE - 1e(936)
GERMANY - 26f(2), (7); 28o(1-3); 33i(6); 208(2); 241(1); 250(1)

HUNGARY - 6(9)
INDIA - 1a(143),(146),(162),(163),(221),(234-236); 1b(26-28),(34); 3a(7),(8); 5a(167); 7(29); 9c(9); 11b(10); 11d(17); 14(14),(23); 44(2); 53(1).
INDONESIA - 1a(11)
IRELAND - 1a(13-15); 1e(14)
JAPAN - 1a(17),(37),(43),(59-60),(62-64),(82),(93-94),(96-98); 1b(56),(65),(99-100),(109),(114),(131-132),(175-176),(178-179),(187-189),(191-194),(201-202); 1c(1-3); 1d(6); 2a(31),(36),(52); 4(17),(29),(32); 8a(27),(43),(62),(66); 14(25); 15(10),(18); 16a(2),(9),(23),(32); 17a(49-52); 19(6),(17); 20a(2); 21(50); 22a(103-107); 23a(8),23b(10), (12),(21),(22); 24(14),(19-20); 28(12),(17); 29(2),(4),(22),(41),(47); 30(1); 31(3); 37(26),(44), 44(3), 52(1) (2); 54(1-2); 59(7); 64(30); 72(2); 76(4); 77(1); 78(12); 78(13); 82(1),(26); 86(1-3); 90(4); 100(1); 105(10-11); 109(1); 113(3-5); 114(3), 119(1).
MEXICO - 1a(146),(149),(151-153), (176-177),(206)
MOROCCO - 1a(33), 1a(35)
NEW ZEALAND - 2a(64)
NORWAY - 5e(1)
PHILIPPINES - 1g(2)
ROMANIA - 2(10-11), (37-38),(53); 2c(5-6)
SOUTH AFRICA - 1a(76); 1b(8),(10-11)
SPAIN - 2a(152-153) (155)
SRI LANKA - 5a(14)
SWEDEN - 1(396); 8(29); 73(4-6),(12); 74(2-3)
SWITZERLAND - 2b(3) (9-10); 8i(4); 25(1)
THAILAND - 3(99-100)
UNITED KINGDOM - 17a(33),(35); 21b(19); 21h(10); 30a(29); 33a(10); 69c(73); 90a(8)
UNITED STATES
  National Agencies - 1b(497-511); 2(78); 6b(35-37)
  State and Local - 1d(5); 3a(14); 5a(145-149); 5i(8-9); 5l(4); 5bd(11); 6t(6-8); 6q(3); 7x(1); 10e(9); 11a(6); 13b(5-6); 14g(14); 14t(1); 16a(10); 17a(50-53); 18a(37); 19e(5); 20af(1); 21v(1); 25d(4); 32a(60); 33b(3); 33e(19); 35e(24); 36a(14-15); 38a(50-51); 38am(9); 41a(6); 42l(3); 43a(7); 51as(3)

YUGOSLAVIA - 14(2); 18(4)

64. SOIL SCIENCE

ARGENTINA - 2(16)
AUSTRALIA - 12e(1)
BRAZIL - 2a(55); 8a(3)
GERMANY - 1(162); 21a(26); 24o(1); 141(2); 206(1); 208(1)
INDIA - 1a(176),(220),(229),(230),(232),(233),(237),(239-241),(242); 1b(31-33),(35),(39); 3a(9),(10); 8a(20); 52(1).
JAPAN - 1a(28); 1b(23); 4(24); 8a(53),(70); 20a(16); 23b(11); 28(18); 29(48); 50(3), (6); 72(1); 85(2)
MEXICO - 1a(141-142),(179)
MOROCCO - 1a(31)
NIGERIA - 2(34)
PORTUGAL - 1a(4); 2a(1-2)
ROMANIA - 1(9)
SWEDEN - 1(395),(399)
SWITZERLAND - 2b(5-6); 8g(1)
TURKEY - 1a(39); 4(47)
UNITED KINGDOM - 26a(34)
UNITED STATES
  National Agencies - 1a(59); 1b(512); 6b(38-39); 9(34)
  State and Local - 2a(9); 5j(10); 13a(21); 15d(20-21); 16c(3); 18c(10); 21a(9); 21g(27); 22a(37); 22d(3); 23a(20); 24a(12); 30c(6); 32a(61); 35e(25); 38a(52-53); 49d(16); 52c(6)

YUGOSLAVIA - 2(9); 3(36)

70. LAW

AUSTRALIA - 18g(1)
FINLAND - 2(117)
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GERMANY - 255(1)
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ISRAEL - 2a(96)

PAKISTAN - 1d(27)
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THAILAND - 3(86)
UNITED STATES
  National Agencies - 1b(513); 2(79-80)
  State and Local - 15d(22); 20ad(2); 22m(43); 25f(3); 32p(2); 37e(6); 37j(1); 46v(1); 51l(1-8)

90. HIGHWAY RESEARCH GENERAL

AUSTRALIA - 85(1)
BRAZIL - 17(22)
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UNITED STATES
  National Agencies - 1b(515-517); 2(81-82)
  State and Local - 2b(8); 5bu(1); 5cw(3); 6f(9); 6m(1-3); 13e(41); 16b(8); 20aj(1); 21k(5); 35a(4); 38f(30)
YUGOSLAVIA - 5(11-12); 11(2)